



# **NATIONAL<sup>®</sup> HYDRO 70" TRIPLEX OWNER'S MANUAL**

**Includes Assembly, Maintenance &  
Parts Lists  
For Serial Numbers 1586 & Up**

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**NATIONAL MOWER CO.**

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HYD700M-8/99

# DECLARATION OF CONFORMITY

according to Directive 89/392/EEC

We NATIONAL MOWER COMPANY

.....  
(Name of supplier)

700 Raymond Avenue, St. Paul, Minnesota 55114 U.S.A.

.....  
(Full address of the manufacturer—authorized representative in the community must also give the business name and address of the manufacturer)

declare under our sole responsibility, that the product

NATIONAL HYDRO 70" TRIPLEX MOWER

(Make and model)

to which this declaration relates corresponds to the relevant basic safety and health requirements of the Directive 89/392/EEC, (if applicable)

and to the requirements of other relevant Directives:

EN292-1&2--EN294--EN349

.....  
(Title and/or number and date of issue of the other Directives)

(If applicable)

For the relevant implementation of the safety and health requirements mentioned in the directives, the following standard(s) and/or technical specification(s) has (have) been respected:

ANSI B71.4

.....  
(Title and/or number and date of issue of standard(s) and/or technical specification(s))

8/1/99



.....  
(Place and date of issue)

.....  
(Name, function and signature of the authorized person)

**IMPORTANT**

## National Mower Safe Operation Practices For Riding Mowers

1. Know control functions and how to stop quickly. READ THE OWNER'S MANUAL.
2. Do not allow children to operate the mower. Do not allow adults to operate the mower without proper instruction.
3. Do not carry passengers. Keep children and pets at a safe distance from an operating mower.
4. Clear the work place of objects which might be picked up by the blades and thrown.
5. To start engine, operator must be seated, reel control must be disengaged and foot control must be in neutral.
6. Take all possible precautions when leaving the mower unattended, such as shifting into neutral, stopping the engine and removing the ignition key.
7. Do not stop or start suddenly when going uphill or downhill. Use extreme caution when mowing on slopes.
8. Reduce travel speed on slopes and in sharp turns to prevent tipping or loss of control. Use extreme caution when changing direction on slopes.
9. Watch for holes in the terrain and other hidden hazards.
10. Watch for dangerous traffic when crossing or near roadways.
11. Never direct the discharge of material from operating reels toward bystanders nor allow anyone near the mower during operation.
12. Handle gasoline with CAUTION - it is highly flammable.
  - a. Use an approved gasoline container.
  - b. Never fill the fuel tank indoors. Wipe spilled gas immediately.
  - c. Open garage doors to allow ventilation if engine is run inside-exhaust fumes are dangerous. Do not run engine in any enclosed area.
13. Keep the mower in good operating condition. Make sure that all safety switches are operating properly and all safety guards are in place at all times, except during servicing.
14. Keep all nuts, bolts and screws tight to be sure that the mower is in a safe working condition.
15. Never store the mower, with gasoline in the tank, inside a building where the fumes could reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
16. Keep the engine free of grass, leaves or excessive grease to reduce a fire hazard.
17. The mower and reels should be stopped and inspected for damage after striking a foreign object. The damage should be repaired before restarting and operating the mower.
18. Do not change the engine governor settings or over speed the engine.
19. Proceed as follows when mowing.
  - a. Mow only in the daylight or in good artificial light.
  - b. Never make a cutting height adjustment while the engine (motor) is running.
  - c. Shut the engine (motor) off when removing grass or unclogging reels.

**WARNING**— California, USA residents are required by law (CA PRC 4442 & CA H & SC 13005) to equip their engines with spark arresters when operating in flammable vegetation. Arresters must be obtained from your engine dealer and are not available from National Mower Company.

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## 1—INTRODUCTION

This manual has been prepared by National Mower Company as an aid to users for assembly, maintenance, adjustment and ordering replacement parts. Additional information will gladly be furnished by calling or writing National Mower Company.

Please furnish us with the Model Number, Serial Number and Date of Purchase when contacting us about your machine. Designations of right, left, front and rear are used as if the operator was sitting in the mower seat.

## 2—RECEIPT OF SHIPMENT

**NOTE**

Carefully inspect your machine and crate for damage that could have occurred during shipment. If damages or shortages are noted, have the transportation company's representative note this on the bill of lading.

Claims for shipping damages must be noted by the consignee at the point of destination and filed with the transportation company that delivers the shipment.

# 3—SPECIFICATIONS

## 3.1—ENGINE SPECIFICATIONS

TYPE: Twin Cylinder, Air Cooled  
ENGINE MODEL: Briggs & Stratton Vanguard  
HORSEPOWER: 11.9 kw (16 hp)  
COOLING: Ducted air flow

## 3.2—TRANSMISSION

TRACTION DRIVE: Direct coupled variable displacement hydraulic pump with high torque wheel motors.  
OIL TANK: ..... 18.9 L (5 gallon) capacity

## 3.3—VEHICLE SPECIFICATIONS

FUEL TANK: 18.9 L (5 gallon) capacity  
WHEELS AND TIRES:  
    Front: 20-10 x 8.00 Tubeless Turfmate  
    Rear: 18-8.50 x 8.00 Tubeless Turfmate  
TIRE PRESSURE: 10-12 PSI  
FRAME: Welded steel construction  
MOWING SPEED: 0- 12 K/H (0 - 7.5 MPH)  
TRANSPORT SPEED: 12 K/H (7.5 MPH)  
REVERSE SPEED: 3 K/H (2 MPH)  
CONTROLS:  
    Foot operated traction pedal for forward and reverse.  
    Hand operated choke and throttle levers.  
    Foot operated hydraulic lift with auto start/stop feature.  
    Hand operated reel engagement lever.  
    Free-wheeling valve.

## 3.4—BATTERY

TYPE: Group U1 Type GT  
NOMINAL VOLTAGE: 12V  
DIMENSIONS: L: 7-3/4"(19.68 cm) x W: 5-3/16"  
(13.17 cm) x H: 7-5/16"(18.5 cm)

## 3.5—MOWER SPECIFICATIONS

NUMBER AND SIZE: 3 – 25" Reels  
REEL DIAMETER: 7" (17.8 cm)  
BEARINGS: Timken Tapered Roller  
BLADES: Six Alloy Steel Blades  
HEIGHT OF CUT: Adjustable: 1/2" to 2" (1.3 cm to 5.08 cm)  
OVERALL CUTTING WIDTH: 70" (177.8 cm)  
HEIGHT ADJUSTMENT: Roller Screw Adjustment  
BEDKNIFE ADJUSTMENT: Screw adjustment of reel to bedknife.  
REEL FLOATATION: Front and Rear Roller with Cutting Unit Center-line Pivot.

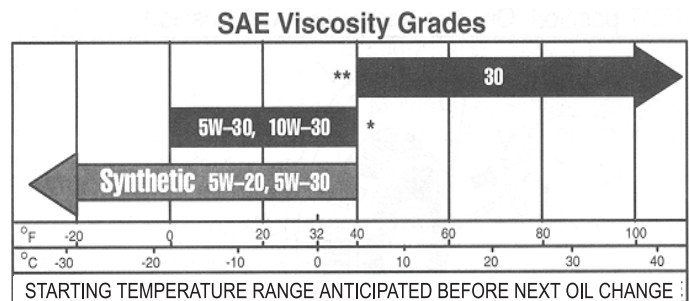
## 3.6—WEIGHT & DIMENSIONS

OVERALL LENGTH: 86-3/8" (219.4 cm)  
OVERALL HEIGHT: 44-3/4" (113.6 cm)  
WHEEL BASE: 50-3/4" (128.9 cm)  
WHEEL TREAD WIDTH: 45" (114.3 cm) (center of tires)  
OVERALL WHEEL WIDTH: 55" (139.7 cm)  
OVERALL WIDTH: 75" (190.5 cm)  
WORKING WEIGHT: 1, 085 lbs. (492 kg)

## 3.7—LUBRICANTS

ENGINE OIL:  
    Use high-quality detergent oil API (American Petroleum Institute) service class SF. Select the viscosity based on the air temperature at the time of operation as shown in the table.

Recommended SAE Oil Viscosity Grades



HYDRAULIC SYSTEM OIL:  
    Use ISO GRADE 100 (SAE 30W) Hydraulic Oil

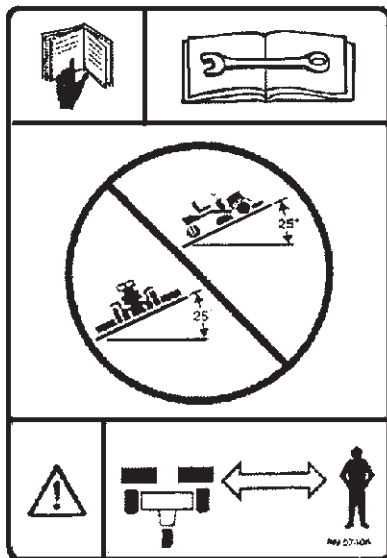
### 3.8—DISPOSAL NUMBERS

Petrol, Lead Free: .....	54104
Engine oil: .....	54112
Fiberglass parts: .....	57103
Tires: .....	57502
Gear oil: .....	54112
Grease: .....	54202
Plastic tanks: .....	57127

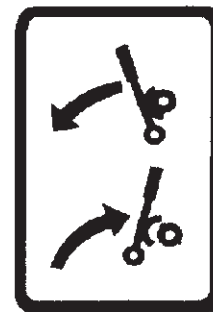
### 3.9—NOISE EMISSION & VIBRATION

Sound:	Operator Position, 88 dBA Sound Power Level (LwA), 106 dBA
Vibration*:	Max. Vibration, 57.7 m/s <sup>2</sup> RMS Location, Left Hand
Operating Condition:	Engine rpm-3200, Unit stationary

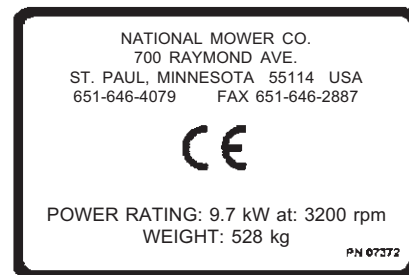
### 3.10—TRANSFERS



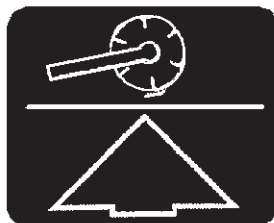
07406



07403



07372



07257



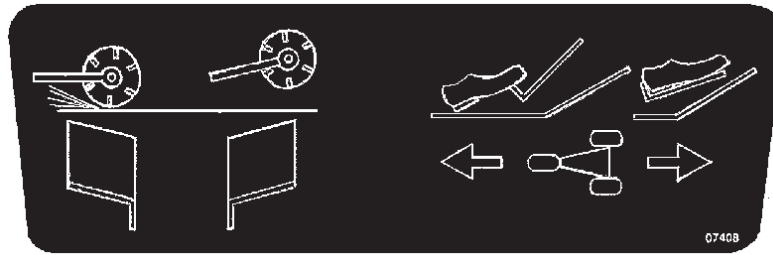
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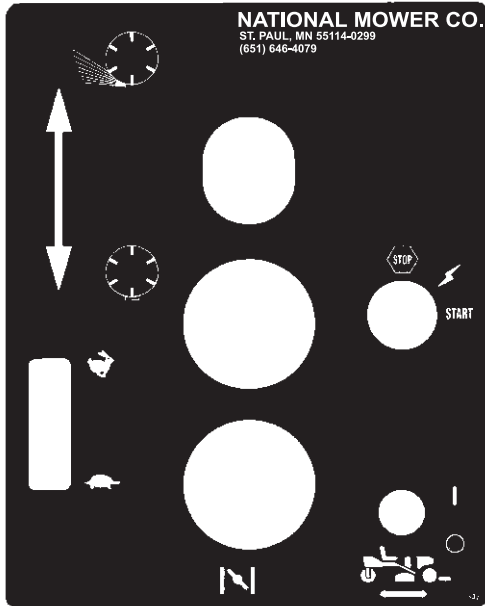
07405



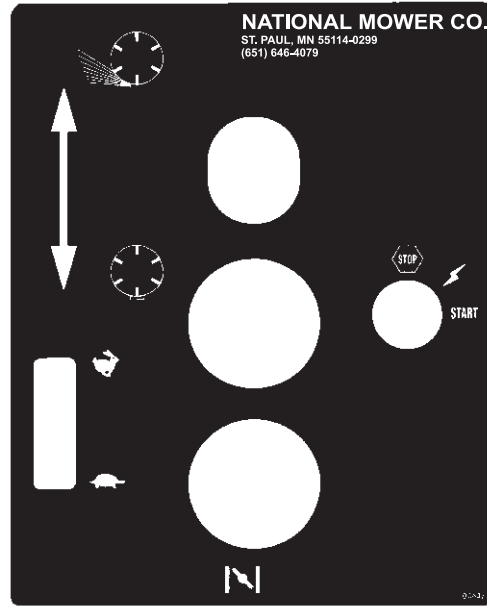
07404



07408



07409



07407

### 3.11—TRANSFER DESCRIPTION

- 07406 Do not exceed 25 degree slope. Located on main chassis.
- 07403 Parking brake on/off. Located on main chassis.
- 07372 Manufacture's identification and specifications. Located on main chassis.
- 07257 Mowers up/reels off. Located on main chassis.
- 07256 Mowers down/reels on. Located on main chassis.
- 07405 Sound level at operators position. Located on main chassis.
- 07404 Sound power level. Located on main chasis.
- 07408 Mow pedal operation and vehicle motion pedal operation. Located on main chassis.
- 07409 Main instrument panel, Three wheel drive unit. Located on main chassis.
- 07407 Main instrument panel, Two wheel drive unit. Located on main chassis.



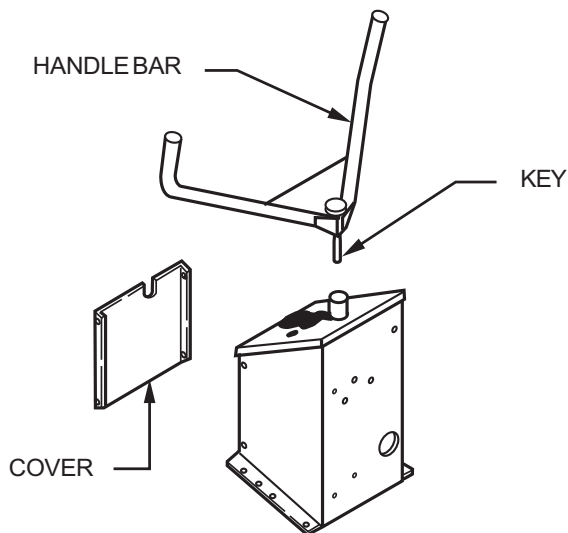
## 4—ASSEMBLY INSTRUCTIONS

### 4.1—ASSEMBLY

The Hydro 70 is shipped in two separate crates, one for the tractor and one for the cutting units.

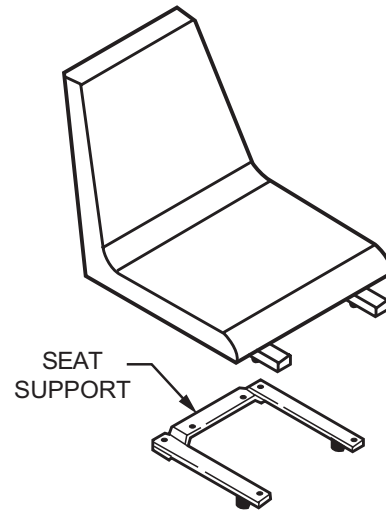
### 4.2—TRACTOR ASSEMBLY

1. Disassemble crating for the tractor carefully to prevent damage to components.
2. Remove the tape holding the keys in the steering shaft. Position the handlebar assembly over the shaft and key securing it with set screws provided in the handle bar.
3. For removal of handle bar see Section 8.12.
4. Remove the tower cover. Refer to section 3.4 for battery specifications. Install the battery on the base inside the tower. Attach the red wire to the positive terminal of the battery and attach the black ground wire to the negative terminal of the battery. Replace and secure the tower cover.



5. The seat base is temporarily held together for shipment. Remove and discard the fastener securing the seat base to the spring plate. Position the seat slider, which is assembled to the seat, onto the seat base plate and secure with locknuts provided.

Attach the safety switch wires to the switch located under the seat. Wires can be connected to either terminal.



6. Tires should be checked and if necessary adjusted for proper inflation. Refer to Section 3.3.
7. Check the oil level in the oil tank. Refer to Section 8.10.
8. Check the oil level in the engine. Refer to 3.7 and 5.1.

### 4.3—ASSEMBLY OF REAR CUTTING UNIT TO TRACTOR

1. Disassemble crating for the cutting units carefully to prevent damage to components.
2. Position the rear cutting unit under the tractor. The rear cutting unit can be identified by the reel guard attached the rear of the cutting unit. Position the cutting unit with the reel pulley on the right side of the tractor.

**NOTE**

Belt tool kit Part# 070008 is available thru National Mower's parts department. This tool will simplify the assembly of the cutting units.

3. Remove the tie wrap holding the pull arm and spring to the cutting unit. Assemble the pull arm to the tractor using the sleeve and fastener provided.

## ASSEMBLY OF REAR CUTTING UNIT, Con't.

4. Remove the two top fasteners holding the pivot bracket to the cutting unit and loosen the bottom fastener so the bracket is free to rotate.

5. Align and assemble the spring and pull arm previously attached to the tractor to the pull arm shaft on the cutting unit. Place the belt on the cutting unit pulley. With the pull arm assembled, rotate the pivot bracket into place using it as a lever arm to compress the spring and reattach with previously removed fasteners.

6. Assemble the pull rod on the left side of the cutting unit to the tractor using fasteners provided.

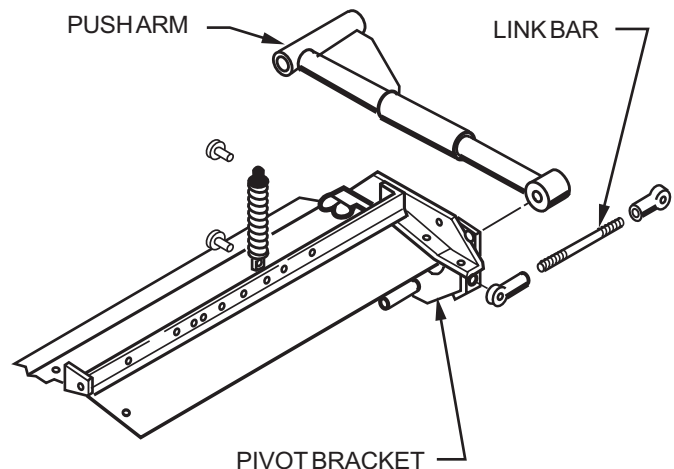
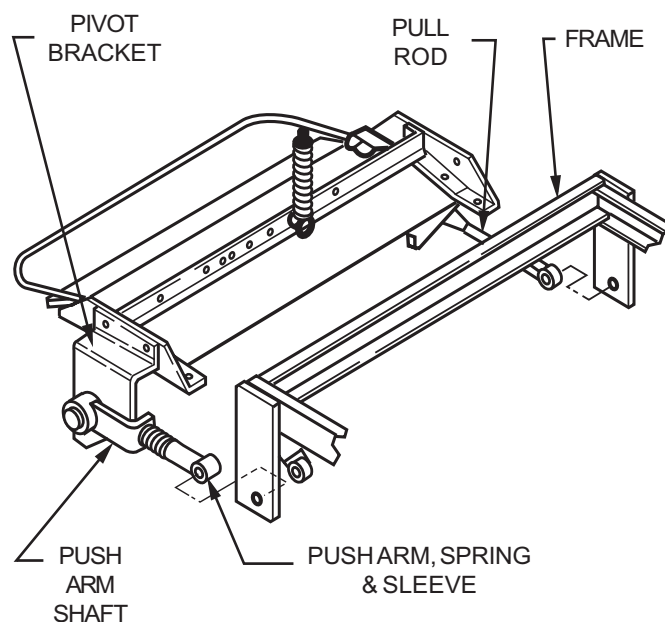
7. A counterbalance spring has been assembled to the tractor located under the steering tower. Remove the spring bushing from the cutting unit making note of its location. Insert the spring bushing into the spring loop, pull directly down on the spring and reinsert the fastener provided thru the bushing into the hole on the cutting unit.

8. Remove the tie wraps securing the lift chains and attach the chains to the lift arm under the tractor. One chain per side.

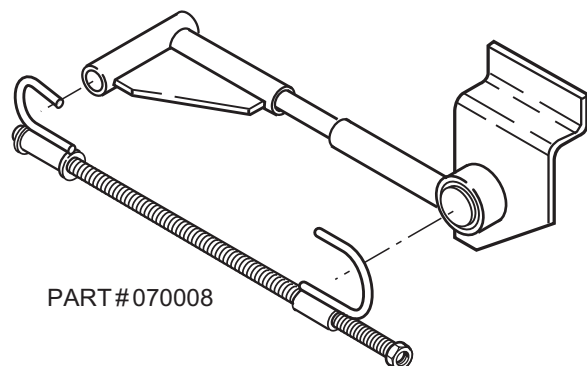
9. Remove the tie wrap attaching the cutting unit belts to the tractor. Position the cutting unit in front of the tractor with the pulleys to the inside. Remove the two top fasteners holding the pivot bracket to the cutting unit. Place the belt on the cutting unit pulley. Assemble the push arm to the pivot bracket using the washers and snap ring provided. Rotate pivot bracket into place using it as a lever arm to compress the spring and reattach with previously removed fasteners.

10. Attach counterbalance spring and chains to lift bar.

11. Connect link bar between cutting units with fasteners provided.



Belt tool, complete with instructions, (below) available through National Mowers Parts Department.



## **5—GENERAL INFORMATION**

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### **5.1—ENGINE**

Your vehicle is powered by twin cylinder, 4 cycle Briggs & Stratton Vanguard engine which uses unleaded gasoline, 85 octane minimum. **DO NOT MIX OIL WITH GASOLINE!** Engine speed is controlled by means of a throttle lever mounted on the left side of console panel.

A separate Engine Manual, prepared by the engine manufacturer is supplied. Study the manual carefully until you are familiar with the maintenance, operation, adjustment and repair of your equipment. Proper attention to the engine manufacturer's directions will assure maximum service life of the engine and highest operating efficiency.

### **5.2—TRACTION DRIVE TRAIN**

Power from the engine is transmitted to the variable displacement pump through a drive coupling. The pump supplies hydraulic fluid to wheel motors. The wheel motors provide the differential action required in turns.

### **5.3—REEL DRIVE**

Power to the reels is transmitted from the engine to a jackshaft mounted under the engine through a spring loaded belt drive. Three separate belts transmit the power from the jackshaft to the mowers.

### **5.4 IGNITION SWITCH**

The reel control lever must be in the disengage position and the traction control pedal is in the neutral position before starting engine. Insert key in switch, turn clockwise as far as it will go to start engine, then release.

a. Do not hold key in "ON" position more than 30 seconds at a time.

b. Key should be removed when tractor is not in use to prevent unauthorized operation.

c. Refer to section 4.2 in the Hydro 70 Operator's Manual for complete starting information.

### **5.5—HOUR METER**

The hour meter indicates the number of hours the tractor has been operated. It can be used to keep track of maintenance intervals and the amount of time required to perform various tasks. The hour meter operates whenever the ignition key is in the "ON" position.

### **5.6—AMMETER**

The ammeter indicates the condition of the charging circuit. If the ammeter indicates a negative reading refer to the Briggs and Stratton engine manual.

### **5.7—REEL CONTROL**

The reel control lever must be in the disengaged or back position to start the engine. Placing lever in engaged position will allow reels to run when mowers are lowered.

Never operate the mowers when they are not cutting grass as excessive friction and heat will develop between the bedknife and reel, and damage the cutting edge.

## 5.8—CHOKE

When starting a cold engine, pull the choke control out to close the choke plate and allow a richer fuel mixture to enter the engine. After the engine starts, push the choke control about half way in to keep the partially closed. Push the choke control all the way in to open the choke plate for normal operation after the choke plate engine is properly warmed. A warm engine usually requires less choke to start.

## 5.9—THROTTLE LEVER

Push forward to increase engine speed, pull back to decrease.

## 5.10—TRACTION PEDAL

The traction pedal operates the forward and reverse direction and speed of the machine. By pushing the toe of the pedal down, the forward speed is increased. By pushing the heel of the pedal down the reverse speed is increased. When the traction pedal is released the machine will slow down and stop.

## 5.11—MOW AND LIFT TREADLE

Depress and hold the down pedal with left foot to lower mowers. Reels will rotate if reel control lever is in “ENGAGED” position. Depress and hold the up pedal to raise mowers. Reels will stop if control lever is in “ENGAGED” position when mowers are raised.

### NOTE

When operating the mow or lift pedal, keep the pedal depressed until the mowers have been completely lowered or raised, and then release the pedal.

## 5.12—FREE-WHEELING VALVE

To permit moving the Hydro 70 without starting the engine, a freewheeling device or tow valve has been provided.

The valve is located under the left shield on the front side of the vehicle. With the engine “OFF”, turn knob to open valve and permit free-wheeling. Free-wheeling valve must be closed during normal operation or tractive effort will be severely reduced.

## 5.13—DROP/LIFT NEEDLE VALVE

A needle valve is located under the left shield on the front side of the vehicle. By turning the needle valve knob, the speed of drop and raising of the cutting units can be adjusted as desired.

### CAUTION

Familiarize yourself with the instrument panel and the controls. Study the instructions and learn to use the controls correctly. Keep hands and feet away from controls unless you intend to use them.

## 3.13 INTERLOCK SWITCHES

There are four interlock switches on your Hydro 70. They are a safety precaution which will allow you to start your mower only when the traction pedal is in neutral, the reel control lever is in the disengaged position and operator is seated on the tractor. If you are able to start your mower with these levers in any other position, adjustment of the switches is required.

1. The neutral start switches are located under the traction control pedal.
2. The reel control lever switch is located on the side of the console and is activated by the reel lever.
3. The seat switch is located under the seat and is activated by the weight of the operator.

## 6—OPERATION

See Section 4.0 in the National Mower Hydro 70 Operators Manual for unit operation.

## 7—ADJUSTMENTS

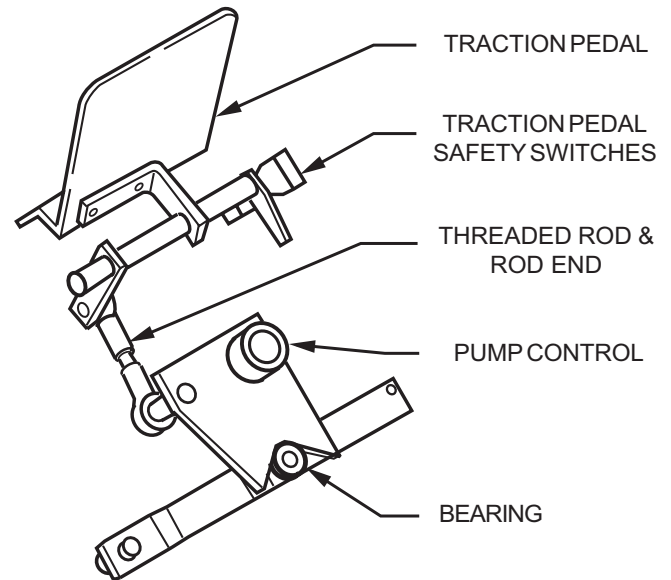
### 7.1—ADJUSTMENTS

#### CAUTION

Read each instruction completely and make sure you understand it before making any adjustment. Follow all the safety precautions.

#### DANGER !

To avoid possible serious bodily injury, before making any adjustments or performing maintenance, place all tractor controls in Neutral, engage parking brake, fully lower cutting units to the ground, turn ignition switch "Off" and remove key.



### 7.2—TRACTION PEDAL ADJUSTMENT

The Traction pedal is equipped with two safety switches and a neutral centering device. The switches prevent the engine from starting when the pedal is positioned in reverse or forward. The centering device locates neutral positioning of the pump.

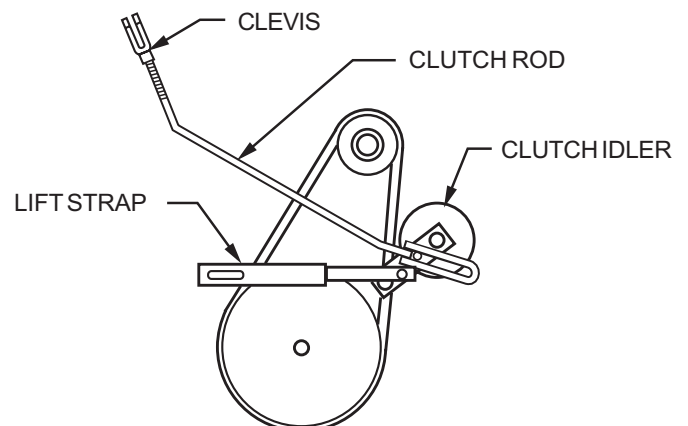
Prior to adjusting for creep, elevate the wheels off the ground and support the vehicle securely. Any adjustments should be done while the hydraulic oil is warm.

To adjust the creep of the drive wheels loosen the fastener attaching the ball bearing to the control arm and move the bearing within the slot to achieve neutral.

Once the traction pedal has been adjusted, the switches may have to be re-adjusted by moving the switches in the range of the slots provided in the switch bracket. Adjust switches so that unit cannot be started unless pedal is in the neutral position.

### 7.3—REEL CONTROL CLUTCH ADJUSTMENT

The reel control clutch idler is preset at the factory. However, if adjustment is necessary, the position of the idler can be adjusted with the clevis on the clutch rod. Loosen the jam nut that locks the clevis to the clutch rod and turn the clevis further onto the rod until proper tension is achieved, and re-tighten nut against clevis. If clevis bottoms out on the threaded rod replace the belts.



## REEL CONTROL CLUTCH ADJUSTMENT, Continued

If clutch idler is restricted from its proper function, (engaging and disengaging reel belt drive), follow these steps. Refer to figure on the previous page.

1. Make sure clutch rod is free from any restriction by moving lever arm back and forth.
2. Loosen mounting bolts for the clutch idler. If the mounting bolts are torqued too tight, it restricts idler movement.
3. Loosen the pivot bolt between the idler arm and lift strap. Any restriction at this point will cause restriction with the idler arm.

## 7.4— SEAT SWITCH ADJUSTMENT

The HYDRO 70 has a safety switch mounted directly to the seat bottom. The switch requires no adjustment.

### CAUTION

If wires should become disconnected from the seat switch it prohibits other safety features from working properly.

### DANGER !

To avoid possible serious bodily injury, before performing any adjustments, maintenance, or lubrication, place all controls in "Neutral", lower the mowers to the ground, engage parking brake, turn ignition switch off and remove key.

## 7.5—HEIGHT OF CUT ADJUSTMENT

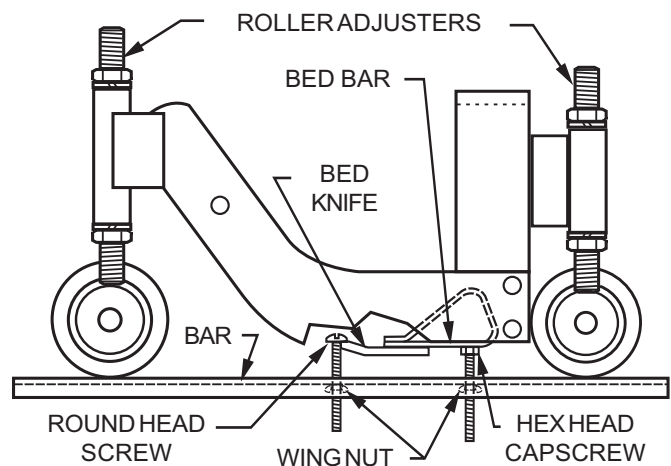
The height of cut is variable and adjusted by moving the front and rear roller brackets to the desired height.

It is important to get all rollers adjusted to the same height, keeping the bed knife parallel to the ground, so that there will be uniform cutting on the entire width of the mower. Do not adjust rollers by sight.

After loosening adjusting nuts on each side of the reel assembly, place a gauge plate under the bedknife and roller measuring the distance between bedknife cutting edge and the rollers. Adjust front and rear rollers equally and insure that the bottom of the bedknife is parallel with the ground. After height of cut setting is determined, re-tighten roller adjustment nuts.

### NOTE

A height of cut tool, Part #070009 (shown below), complete with instructions, is available through the National Mower Parts Department.



### INSTRUCTIONS:

1. Preparation of bar—Position round head capscrew to desired height of cut. Measure from flat surface of bar to the underside of round head screw. Lock round head screw in position with wing nut.

Position hex head capscrew 1/8 less than desired height of cut. Measure from flat surface of bar to the top of the hex head capscrew. Lock hex head capscrew in position with wing nut.

2. Setting height of cut—Hook round head screw on top edge of bedknife, and rest hex head capscrew against bedbar.

Adjust front and rear roller adjusters so that the rollers contact bar. Check roller placement for the full length of the cutting unit by moving the bar side to side while still located on the bedknife/bedbar to achieve consistent height of cut the full width of the cutting unit. Lock roller adjusters in place.

## 7.6— REEL TO BEDKNIFE ADJUSTMENT

The reel is adjusted to a fixed position bedknife. This makes a more rugged and stable frame retaining adjustment longer.

To adjust the reel to bedknife contact, turn the hex adjuster on each side of the reel down. Proceed slowly and do not over adjust - about 1/8th of a turn on each side. Do not over tighten. A too tight reel will wear much faster. The reel should "wipe" or lightly touch the bedknife. By using paper strips held between reel and bedknife, check to see that blades are cutting the paper all the way across.

### **DANGER !**

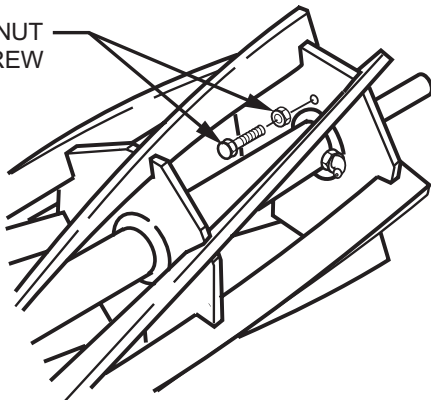
Use heavy gloves and be careful— blades are sharp!

## 7.7—REEL END PLAY ADJUSTMENT

As the reel is used, normal wear of the reel bearings will cause end play. This condition could cause uneven wear to moving parts and uneven cutting of turf.

Test for end play periodically by trying to move the reel from side to side in the frame. If there is any movement, adjust by loosening the locknut on the adjustment body, which is located on the inside right end of the reels and turn adjustment bolt in a half turn or less. Do not overtighten as it would cause excessive bearing wear. Test again for end play, if reel is rotating freely and end play can not be detected, retighten the locking nut on adjustment bolt.

LOCKNUT  
& SCREW



## 7.8— BACKLAPPING PROCEDURE

Back lapping is a very important step in maintaining sharp reel blades on the rear and wing mowers.

Many types of compounds are available for lapping. However, we recommend a good pre- mixed water soluble compound such as Pinhigh. Prices, grit ranges and ordering information are available by calling a toll free phone number 1-800-422-4748. Pre-mixed compound saves the time required to mix, eliminates the waste of abrasive, rinses off easily with water and is available in all grit ranges from coarse to extra fine.

This procedure should be performed when the reel blades and bed knife become slightly rounded and the grass is not cut cleanly with only a slight bed- knife adjustment. After grinding the bedknife and reels, backlapping should be done to establish a perfect match between the bedknife and reel blades.

1. Clean cutting units of any foreign debris and disengage reel clutch.
2. Make sure to adjust the bedknife to the reel so that the bedknife is level with the reel and light contact is maintained.
3. Reels must be run in a reverse direction to be lapped. Remove exterior guards as needed. Attach a back lapping machine (not supplied by National Mower) to one of the outside reel stub shafts of the front two cutting units, following the instructions furnished by the backlapping machine manufacturer.

### **NOTE**

Some back lapping machines may not rotate all three cutting units simultaneously. If this occurs back the reel adjustment off or disconnect the remaining two cutting units and concentrate on one cutting unit at a time.

4. With reels running, and concentrating on one reel, apply the lapping compound using a 2" or 3" wide brush. Apply the compound evenly to the mowing blades. Adjustment of the reel to bedknife may be required, relap as necessary.

### **DANGER !**

Be extremely careful not to let the brush, your fingers or your clothing get caught in the reels. Use approved safety glasses to protect eyes from flying particles and abrasives.

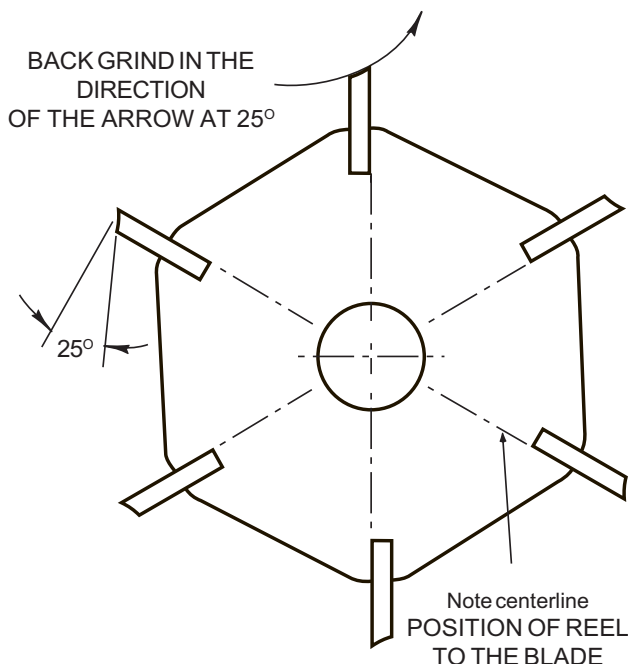
## BACKLAPPING PROCEDURE, Continued

5. Stop the reel and examine both bed knife and reel blades to see that the cutting edges are uniformly sharp. If not, gradually tighten hex adjuster and repeat Step 4 on previous page until the proper sharpness results.
6. Rinse off the compound thoroughly with water to remove all abrasive. Check for sharpness and readjust the bed knife if necessary.
7. Check reel adjustment on each mower and adjust if necessary, so that they will cut paper cleanly across the full length of the bed knife when paper is held 90° to the bedknife and pinched when held horizontally.

## 7.9—GRINDING PROCEDURE

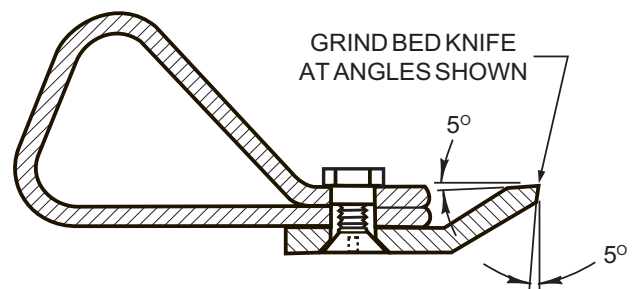
**DANGER !**

Be extremely careful not to let brush, your fingers or your clothing get caught in the reels. Use approved safety glasses to protect your eyes from flying particles and abrasives.



Reels must be ground at 25° in the direction shown by the arrow. Back grind until reel blades are free from roundness, dents and nicks. Spin grind to remove all burrs. All blades must be on the same diameter.

For maximum cutting efficiency, grind bed knife top and front edges at 5° as shown.





## 8—MAINTENANCE

### **DANGER !**

To avoid possible serious bodily injury, before performing any adjustments, maintenance, or lubrication, place all controls in "Neutral", lower the mowers to the ground, engage parking brake, turn ignition switch off and remove key.

### 8.1—GENERAL MAINTENANCE

The long trouble-free life of your machine depends on the maintenance it receives. Set up a maintenance program for your Hydro 70 to cover the following points:

1. Keep tractor and mowers clean.
2. Keep all moving parts properly lubricated.
3. Keep all parts properly adjusted.
4. Inspect for loose, worn or damaged parts (Fittings and hoses).
5. Keep shields in place at all times.
6. Keep tires properly inflated.

If your inspection reveals worn or damaged parts, replace these parts before operating machine or before actual breakdown occurs.

### **DANGER !**

To avoid injury from hot, high pressure oil, never disconnect hydraulic hoses with attachments in up position. Never run hands across tubes, hoses or fittings to check for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin.

### 8.2—ASSEMBLY & DISASSEMBLY

Use the illustrations in the Parts Section as reference for the disassembly and assembly of components. Always maintain relative position of parts when disassembling. Clean and lubricate individual parts and components as required.

### 8.3—BATTERY

1. Make certain the ignition switch is in the "Off" position and the keys have been removed.
2. Refer to Section 3.4 in this manual for battery specifications.

### **CAUTION**

Always wear protective glasses or goggles and protective clothing when working with batteries. You must follow the battery manufacturer's instructions on safety, maintenance and installation procedures.

3. When the battery is being installed or removed, make sure that the positive and negative terminals do not come in contact with metal tractor parts at the same time or severe damage will result.

Always connect the "ground" (black) cable last and remove it first whenever performing any maintenance.

4. Battery connections must be kept clean and tight at all times. Loose cables will cause eventual battery failure. Keep terminal covers in place.
5. Use soap and water to clean the battery as required. Care must be taken to prevent soap and water from getting inside the battery.
6. Brighten the terminal contact surfaces with steel wool.
7. Apply a light coat of petroleum jelly or chassis lubricant to terminals and cable ends to prevent corrosion.
8. Tighten cables securely to battery terminals.

### **DANGER !**

Batteries contain sulfuric acid and generate explosive mixtures of hydrogen and oxygen gases. Keep any device which may cause sparks or flames away from the battery to prevent explosion.

## 8.4—CHARGING A BATTERY

1. Remove the battery from the tractor before charging.
2. Be sure charger is “Off”.
3. Connect charger leads to battery. Connect the positive (+) connector from the charger to the positive battery terminal. Connect the negative (–) connector of the charger to the negative battery terminal.

### **DANGER !**

To avoid possible injury, stand away from battery when charger is turned on. A damaged battery or a battery with an internal short could explode.

4. Charge the battery using one of the methods shown below. Follow the manufacturer’s instructions on the charger.
5. If when charging the battery, violent gassing or spewing of electrolyte occurs, or the battery case feels hot (125 F- 52 C), reduce or temporarily halt charging to avoid damaging the battery.
6. Always turn charger to “Off” before removing a the battery.

### MAINTENANCE:

#### Slow Charge

10 hours @ 5 amps

5 hours @ 10 amps

#### Fast Charge

2-1/2 hours @ 20 amps

1-1/2 hours @ 30 amps

1 hour @ 45 amps

## 8.5—BED KNIFE REPLACEMENT

When the bed knife becomes damaged or too worn to keep sharp, it must be replaced. Design improvements have made bed knife replacement easier with bolt-on construction. Follow the procedure below.

1. The backbar (1), bed knife (2) and fasteners have been assembled at the factory under tension. To ease replacement and prevent misalignment of components, the leading edge of the backbar must be tack welded two or three places before the old fasteners are removed.
2. Remove shoulder nuts (3) and flat head screws (4). If shoulder nuts are badly rusted or corroded, they may have to be cut off and screws driven out to be removed.
3. Clean the bottom surface of the backbar for maximum metal contact with the new bed bar.
4. Fasten the new bed knife to the bottom of the backbar in the position shown (bent edge up). Shoulder of shoulder nuts must be seated firmly in the backbar and screws must be flush with the bottom of the bed knife.
5. Torque shoulder nuts 35 to 40 ft/lbs.

## 8.6—FUEL FILTER

Before servicing the fuel filter, thoroughly clean outside of filter housing and fuel hoses, dirt must not be allowed to enter into fuel or fuel system. Refer to the engine manual for specific instructions.

## 8.7—ENGINE

Refer to Engine Manual for manufacturer’s maintenance recommendations. Change oil and oil filter after the first 25 hours of operation and every 150 hours thereafter.

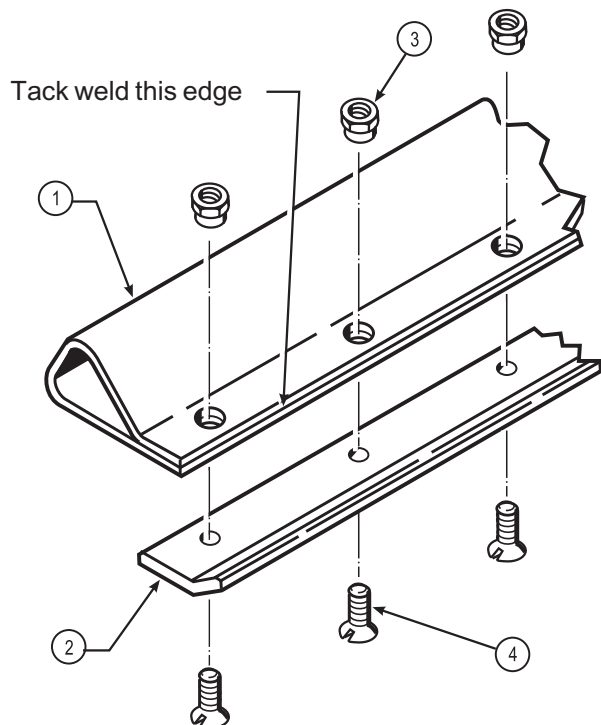
### **NOTE**

Engine replacement parts should be ordered through your local Briggs & Stratton dealer.

## 8.8—ELECTRICAL SYSTEM

Make certain all terminals and connections are kept clean and properly secured.

1. Check switches regularly to be sure they are kept clean and operating correctly. See 7.2, 7.3 and 7.4 in the “Adjustments” section.
2. Keep wire harness and all individual wires away from moving parts to prevent abrasive wear or potential short circuits.
3. Exercise extreme care when working with the electrical system.



## 8.9—HYDRAULIC HOSES

1. Hydraulic hose and tube lines should be inspected every week to check for cuts, loose connections, kinks and wear.

**DANGER !**

To avoid serious bodily injury, always lower mowers to the ground, place all controls in Neutral and shut off engine before inspecting hydraulic lines or hoses. Never run hands across tubes, hoses or fittings to check for leaks.

2. Be sure tubes and hoses do not come in contact with other frame parts which could cause abrasive wear. Always replace worn hoses or tubes before operating machine.
  - a. Assemble nut, sleeves, and tube to fitting body with minimum torque (finger tight) until flare contacts seat on fitting body.
  - b. For tightening reference, mark a line lengthwise on both the nut and adapter fitting with a marker.
  - c. Using a wrench, rotate the nut to tighten. Turn the nut the amount shown in the chart following. The line will show which fittings have been tightened and how much.
  - d. On hoses with "O" ring fittings, make sure "O" rings are clean and hose fittings are properly seated before tightening.
3. Hold the fixed portion of the hose coupling with one wrench; use a second wrench to tighten or loosen the hose nut. This will prevent damage to the fitting seal. When tightening a hose, do not allow it to twist; hold it in a normal straight portion.

Tube O.D. or Hose I.D.	Rotate No. of Hex Flats
3/8"	2
1/2"	2
5/8"	1-1/2 to 2
1"	3/4 to 1

## 8.10—HYDRAULIC OIL

1. The reservoir should be checked daily for proper level in the sight glass gauge on rear of the oil tank. Oil level should be seen in the sight glass.
2. Park the tractor on a flat or level surface. Fully lower all cutting units.
3. Oil should be at 60 F to 90 F (16 -32 C), when checking level. Do not check oil level when oil is hot.
  - a. The oil should be changed after a major component failure, or if you notice the presence of water (noted by a cloudy or milky appearance), air (noted by foam), or a rancid odor (indicating excessive heat).
  - b. Once a year check the breather element in the tank cap and replace if necessary.
5. To drain hydraulic oil tank, remove drain plug from bottom of tank and loosen to remove fill cap on top of tank.
6. Reinstall drain plug and fill hydraulic tank to full level on sight gauge, use only filtered hydraulic oil. The total hydraulic system oil capacity is approximately 5 gallons.
7. Jack up front tires so they spin freely.
8. Start engine: operate the traction pedal and cycle lift cylinder for a minimum of three minutes. Recheck oil level in sight glass gauge.

## MAINTENANCE, Continued

### 8.11—HYDRAULIC OIL FILTER

To prevent damage to the hydraulic system, the hydraulic oil filter should be changed after the first 25 hours of operation and every 250 hours thereafter.

1. Remove the old filter and fill new filter with clean fluid.
2. Install new filter. Hand tighten only.
3. Run engine at idle speed with hydrostatic pump in neutral for five minutes.
4. Check hydraulic oil level and add if necessary.

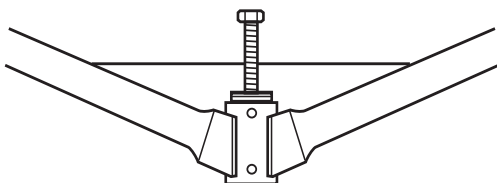
#### CAUTION

Frequent checks must be made on the oil level in the hydraulic system. Should the pump run short of oil, immediate and permanent damage will result.

### 8.12—HANDLE BAR REMOVAL

For easy removal of handle bars follow this procedure.

1. Cut away rubber coating above steering hub. (Shown in diagram) Clean internal threads as necessary.
2. Insert 3/8"-24NF X 2" hex head capscrew. (Fully threaded if possible).
3. Loosen set screws attaching handle bars to the steering shaft.
4. Screw capscrew in until handle bars are removed.
5. Reinstall handle bars and replace the 2" long capscrew with a 3/8"-24NF x 3/8" long capscrew to prevent future rusting of steering hub to shaft.



### 8.13—JUMPER CABLES

Before attempting to "jump" the battery, check the condition of the battery, check the water level and refer to the battery manufacturer's instructions.

1. Stop the engine on vehicle with good battery.
2. Connect one jumper cable to positive terminal on good battery. Connect other end of the jumper cable to the positive terminal on the dead battery.
3. Connect one jumper cable to negative terminal on good battery. Connect other end of negative jumper to ground (frame) of vehicle with dead battery.

### 8.14—LUBRICATION

Refer to "Lubrication" Section, Pages 24 and 25 of this Maintenance Manual.

### 8.15—PAINTING

For protection and appearance, clean and retouch scratched or worn painted surfaces. National Mower green and white spray paint cans, in 12-3/4 ounces, are available at your National Mower Equipment Distributor.

### 8.16—BELT REPLACEMENT

#### NOTE

To make belt changes easier a belt tool kit is available through National Mowers parts department. (Refer to section 4.3).

Belts should be inspected regularly, worn or damaged belts may cause poor mowing results or disrupt operation. If a belt change is necessary follow these steps.

1. Remove the mounting bolts securing the pivot bracket on the two front cutting units.

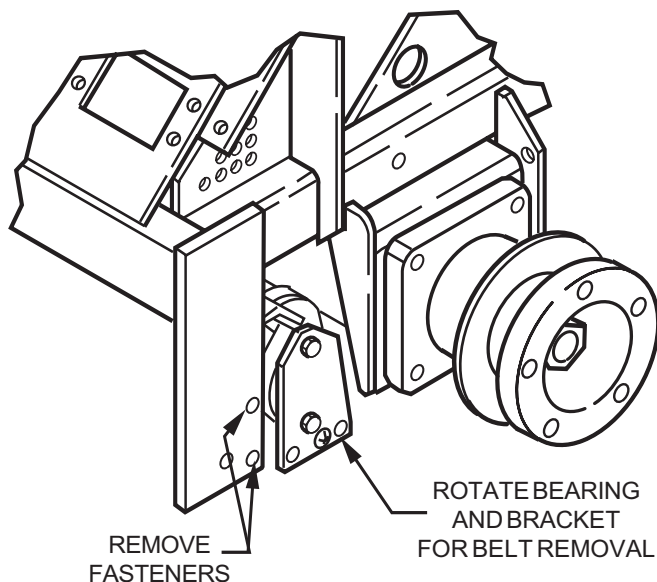
#### CAUTION

This bracket is spring loaded. Slowly rotate the pivot bracket.

## BELT REPLACEMENT, Continued

1. Gently roll the pivot bracket off of the cutting unit. Now the belts can easily be removed from the reel pulleys.
2. Remove the top two bolts on the rear cutting unit (right side only) pivot bracket. (Noting this bracket is under spring pressure). Loosen the bottom bolt and use it as a pivot point. Roll back the pivot bracket allowing the spring pressure and belt tension to be released. (Use of a crescent wrench to get extra leverage is very helpful). Remove belt from rear cutting unit pulley.
3. To remove belts from the tractor you must remove the left front cover to access the main engine drive belts. Remove the front belt guide on the engine drive pulley, with clutch disengaged, the two main drive belts and the left wing cutting unit belt, can now be removed.
4. Removal of the right wing and rear cutting unit belts can be done by removing the two capscrews holding the bearing mounting bracket in place. With capscrews removed rotate the bearing and bracket creating space to remove both belts.

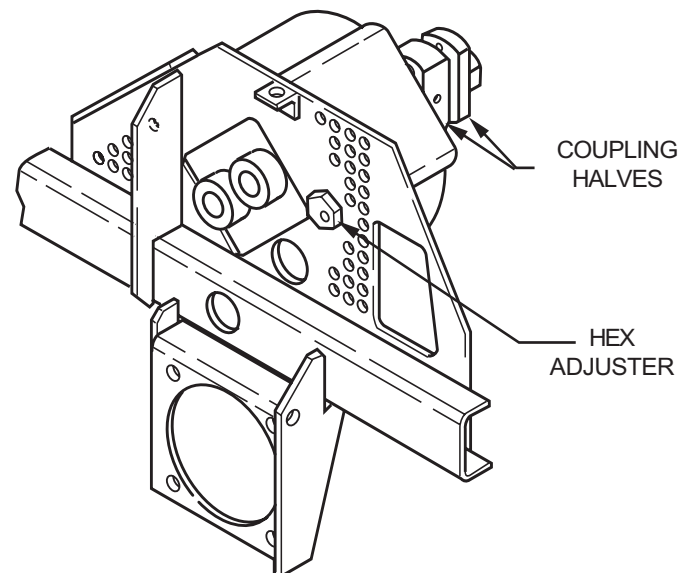
For reinstallation of new belts reverse these steps. Taking care to tighten all mounting fasteners and making sure all belts, pulleys, and pulley scrapers are all in alignment.



## 8.17—COUPLING ALIGNMENT

To prevent coupling failures proper shaft alignment between the pump shaft and engine shaft is required. Following these steps will ensure proper alignment.

1. Remove flex coupling disk (Part# 591181) from in-between coupling halves.
2. Rotate both coupling halves to a vertical position to check up and down alignment.
3. Loosen the four fasteners mounting the hydraulic motor to the frame.
4. Rotate the hex adjuster (counter clockwise to raise, clockwise to lower) to achieve the proper height of the hydraulic motor pump shaft. It is recommended to check alignment on the rounded surfaces of the couplings.
5. Tighten hydraulic pump mounting fasteners. Recheck alignment.
6. To adjust forward and back alignment, rotate couplings 90° to a horizontal position and loosen the four fasteners mounting the engine to the frame.
7. Slide engine forward and back until proper alignment is achieved. Retighten fasteners.
8. Remount coupling disk. (Use of a thread locking formula is recommended).



## 9—STORAGE

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### 9.1—GENERAL INSTRUCTIONS

When you do not plan to use your vehicle for some time, it should be stored in a dry and protected place. Unnecessary exposure to the elements may deteriorate its appearance and shorten the usual service life.

### 9.2—ENGINE

1. Drain the fuel from the fuel tank and carburetor.
2. Operate the engine until the gasoline in the carburetor is completely consumed.

#### IMPORTANT

Gum will eventually form in the tank, fuel line, and carburetor if the fuel is not drained. Gum in the carburetor jets and passage affects engine starting.

3. While the engine is still warm, drain the oil from the crankcase and refill with fresh oil. Refer to the engine manual for specific instructions.
4. After engine has cooled, remove the spark plugs and put about one tablespoon of SAE 30 oil into the cylinder.
5. Clean exterior of engine. Paint the exposed metal or coat it with a light coating of rust preventative oil.

### 9.3—BATTERY

1. Remove battery and clean it, refer to Manufacturer's manual for specific instructions. Also refer to 8.3 and 8.4 in the Maintenance Section of this manual.
2. Maintenance-free batteries should be stored in an upright position in a cool, dry place. Storage above 80° F (26.7°C) greatly increases self-discharge. If wet batteries are discharged, the electrolyte will freeze when stored below 20° F (-7° C).

#### IMPORTANT

The battery should be checked every 60 to 90 days while in storage, and should be recharged if necessary.

### 9.4—TRACTOR

Wash, clean and completely lubricate the tractor. Paint exposed metal with National Mower paint.

### 9.5—TIRES

1. Before storing the vehicle, clean the tires thoroughly.
2. Jack up the vehicle so that the load is off the tires. If it is not jacked up, check the tires at regular intervals and re-inflate as necessary to keep them at the recommended pressure.
3. Store the vehicle so that tires are protected from the sunlight.

### 9.6—STARTING THE ENGINE AFTER STORAGE

1. Check and recharge the battery according to recommendations given by battery manufacturer.
  - a. Refer to Section 8.3 in this manual.
  - b. Reinstall the battery.
2. Check oil level in crankcase and hydraulic oil tank.
3. Fill the fuel tank with fresh gasoline. Check fuel filter.
4. Remove the spark plug and wipe dry. Crank the engine (with spark plug removed), using starter, until excess oil has been expelled through the spark plug hole. Replace the plug and connect the ignition lead wires.
5. Before driving the vehicle, check to make certain that the tires are properly inflated to the proper pressure.
6. Either move the vehicle outside before starting engine or keep doors and/or windows wide open to provide sufficient ventilation to prevent danger from carbon monoxide gas in the exhaust. Start the engine but do not operate at high speed immediately after starting. Allow time for it to become properly warmed and lubricated.

## 10—TROUBLE SHOOTING GUIDE

### 10.1—ENGINE WILL NOT START

Check fuel in tank.

Check if fuel is at end of fuel line at carburetor.

If not, clean filter on fuel shutoff on bottom of tank.

If not, replace fuel filter.

Check spark plugs.

Check for spark at spark plug.

Check for foul condition.

Replace spark plug if necessary, refer to Briggs and Stratton engine manual for recommended spark plug number and gap.

Check position of reel engagement lever and traction pedal, both must be in disengaged (lever) and neutral (pedal) position.

Check electrical wiring and switch operation.

Check positioning of reel control safety switch and traction pedal neutral safety switch. Both must be adjusted to allow current flow from the "s" terminal to the starter solenoid.

Refer to Page 26 for circuit diagram.

Check for continuity of each safety switch. Replace switch as required.

Check battery for charge level. Replace or charge if necessary.

Check for corrosion on battery terminals, clean as necessary.

### 10.2—TRACTOR WILL NOT MOVE

Disengage parking brake.

Check towing valve assuring that the valve is totally closed.

Check linkage from traction pedal to the pump control mechanism to assure complete attachment of all linkages.

### 10.3—REEL NOT TURNING:

Check for debris jammed between reel and bedknife.

Check for proper belt tension. Tensioning on belts for countershaft to reel is non-adjustable. Check the condition of the slider shaft (under spring) of the push and pull arms for free movement, if necessary clean shaft and apply grease to mating surfaces. If

slippage still occurs as a result of belt wear and belt stretch, replace the belt.

Check drive belts between engine and countershaft pulley. If adjustment is necessary, this can be accomplished by adjusting the clevis on the reel engagement lever for more tension on the belts. If clevis needs to be adjusted beyond the thread length available, replace the belt.

### 10.4—REEL WILL NOT CUT

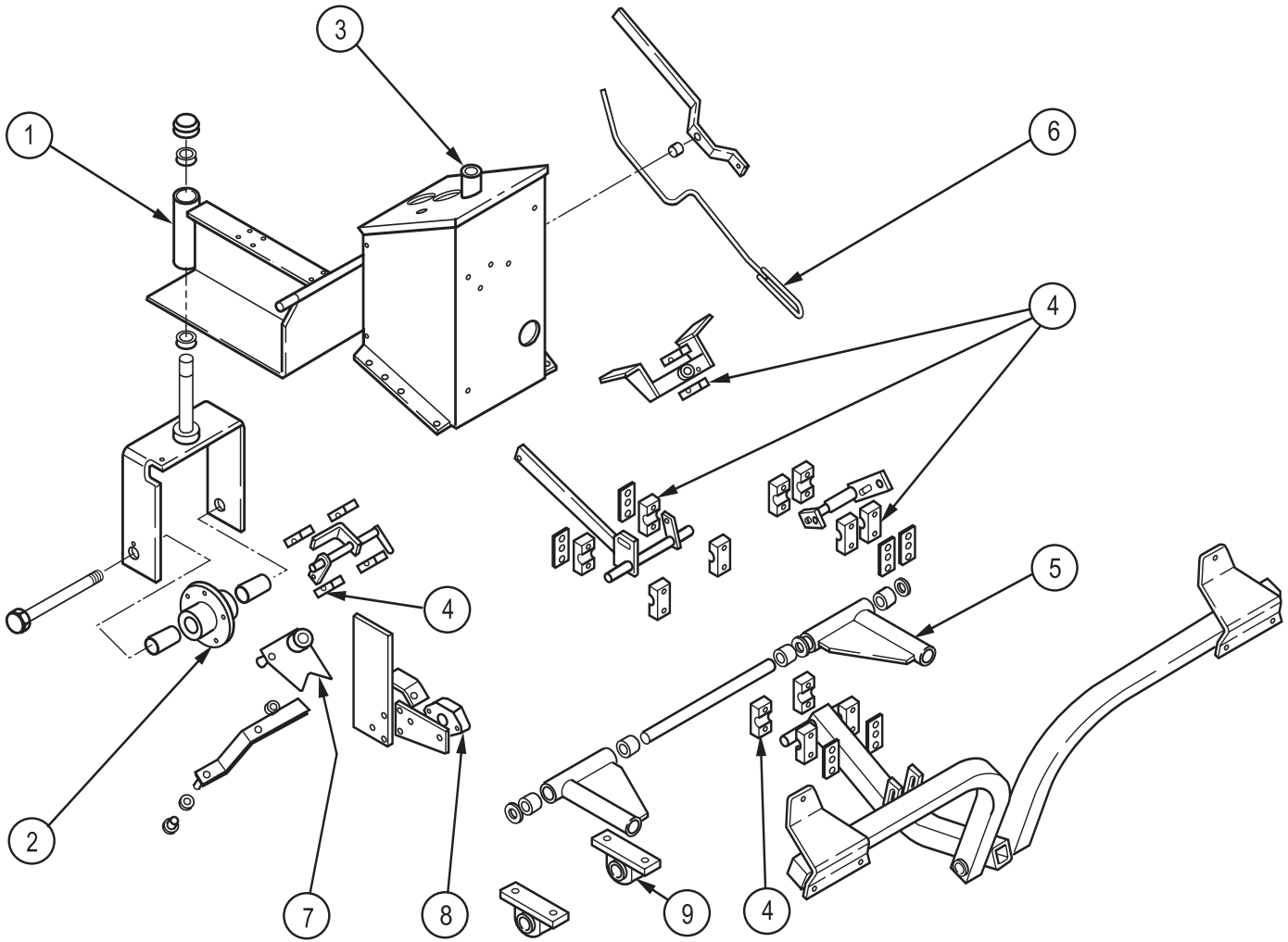
Check reel to bedknife clearance with paper, (common newspaper), the reel should cut the entire length of the bedknife. If adjustment is necessary adjust clearance by turning (equal turns on each side of the reel) hex reel adjusters located on each side of the reel. Turn a 1/8 turn at time, periodically checking with paper.

Inspect condition of the reel and bedknife and service as necessary.

**DANGER !**

To avoid possible serious injury, before making any adjustments or performing maintenance, place all controls in neutral, fully lower cutting units to the ground, turn ignition switch "OFF" and remove key.

# 11—LUBRICATION



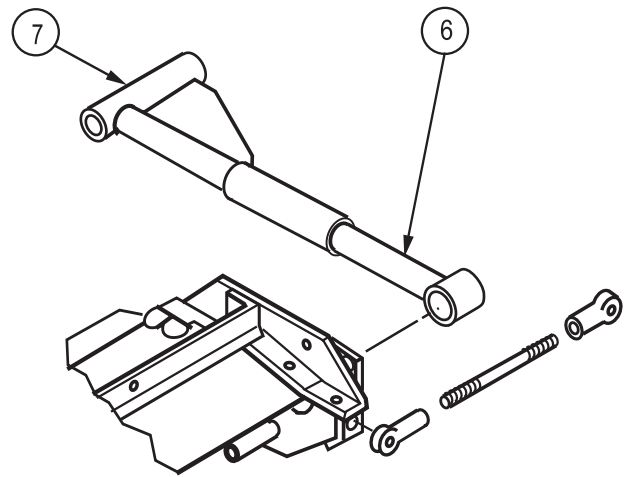
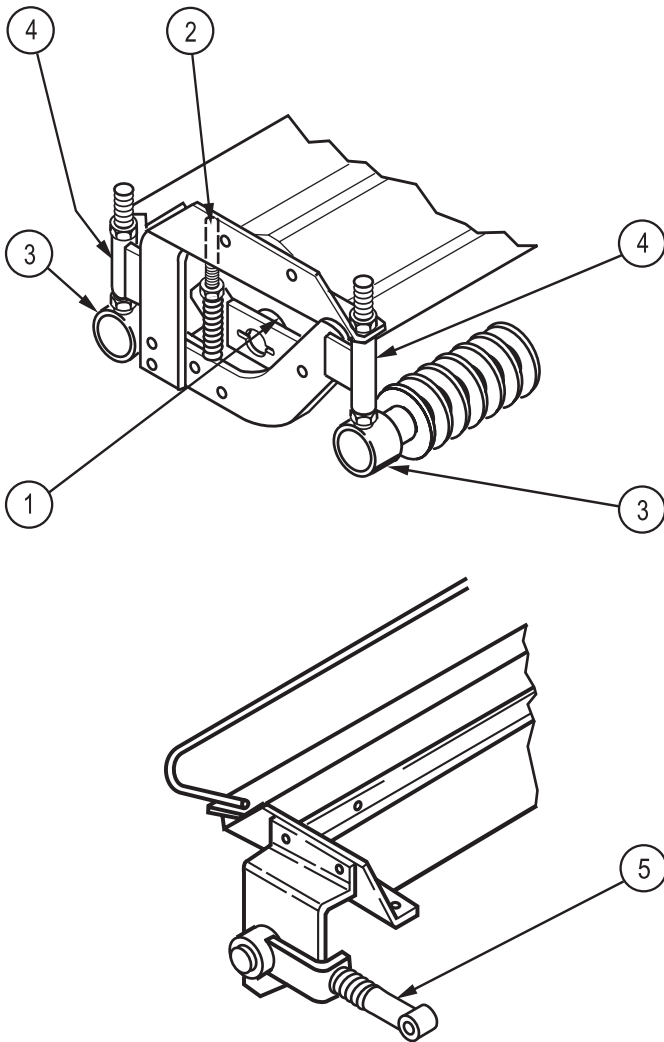
Grease Items 1 through 9 (use pressure gun) every 40 hours.

Clean fittings and slowly fill until grease begins to seep out.

Apply several drops of SAE 30 oil to all linkage friction points.

<u>Item</u>	<u>Description</u>	<u>No. of Fittings</u>
1	Fork pivot bearing	1
2	Rear wheel hub bearing	1
3	Handle bar shaft pivot	2
4	Pivot bearings	9
5	Push arm brackets	4
6	Reel engagement	
7	Neutral control bearing	
8	Countershaft bearing	1
9	Countershaft bearing	2



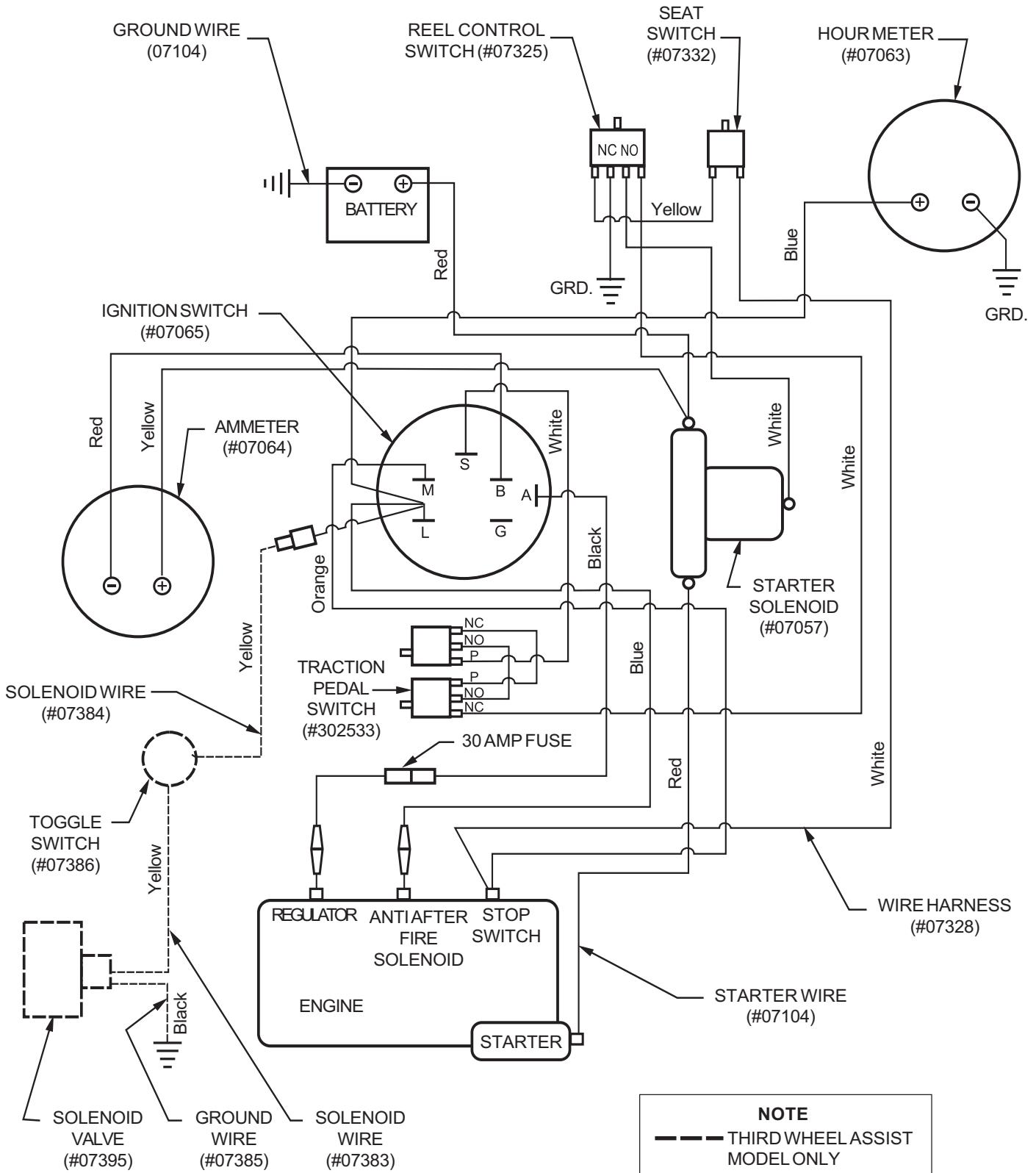


Grease Items 1 through 7 (use pressure gun) every 40 hours.

Clean fittings and slowly fill until grease begins to seep out.

<u>Item</u>	<u>Description</u>	<u>No. of Fittings</u>
1	Reel shaft bearing	2
2	Reel to bed knife adjuster	2
3	Roller bearing (per cutting unit)	4
4	Roller adj. bracket (per cutting unit)	4
5	Pull arm, rear	2
6	Pull arm, front	4
7	Pull arm bracket	4

# 12—ELECTRICAL SCHEMATIC



# PARTS LIST

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*Note: For your records and future ordering, fill in the following information.*

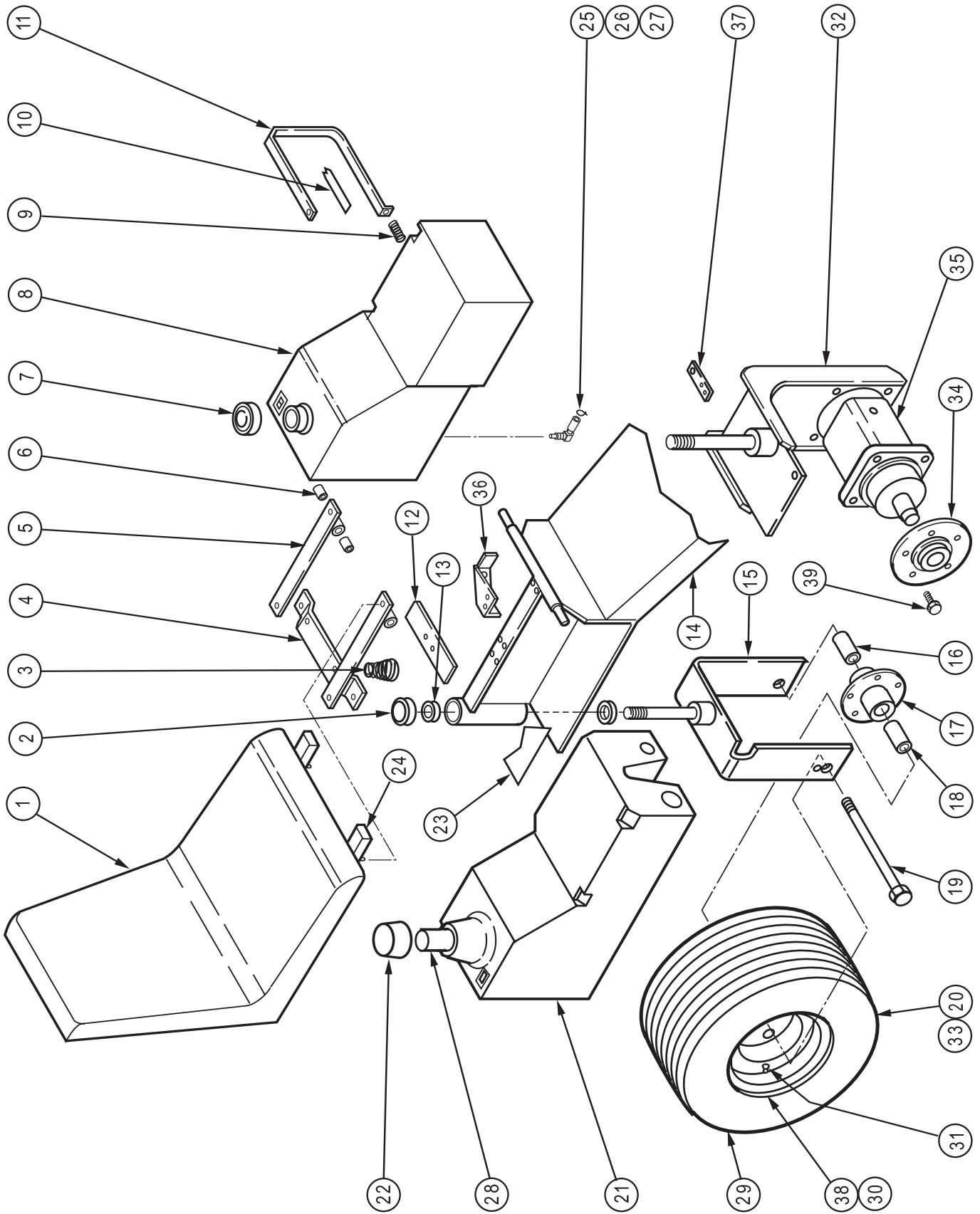
DATE PURCHASED	MODEL NO.	SERIAL NO.

## **ORDERING INFORMATION**

***When ordering replacement parts, always furnish:***

1. Your complete name, address and phone number.
2. Model Number and Serial Number (plate located on the main frame between the oil tank and the fuel tank).
3. Part Number (it is recommended that the correct number be verified with a current Master Price List).
4. The full Description of the part.
5. Quantity desired (quantity shown is the total number of parts contained in the particular view shown).

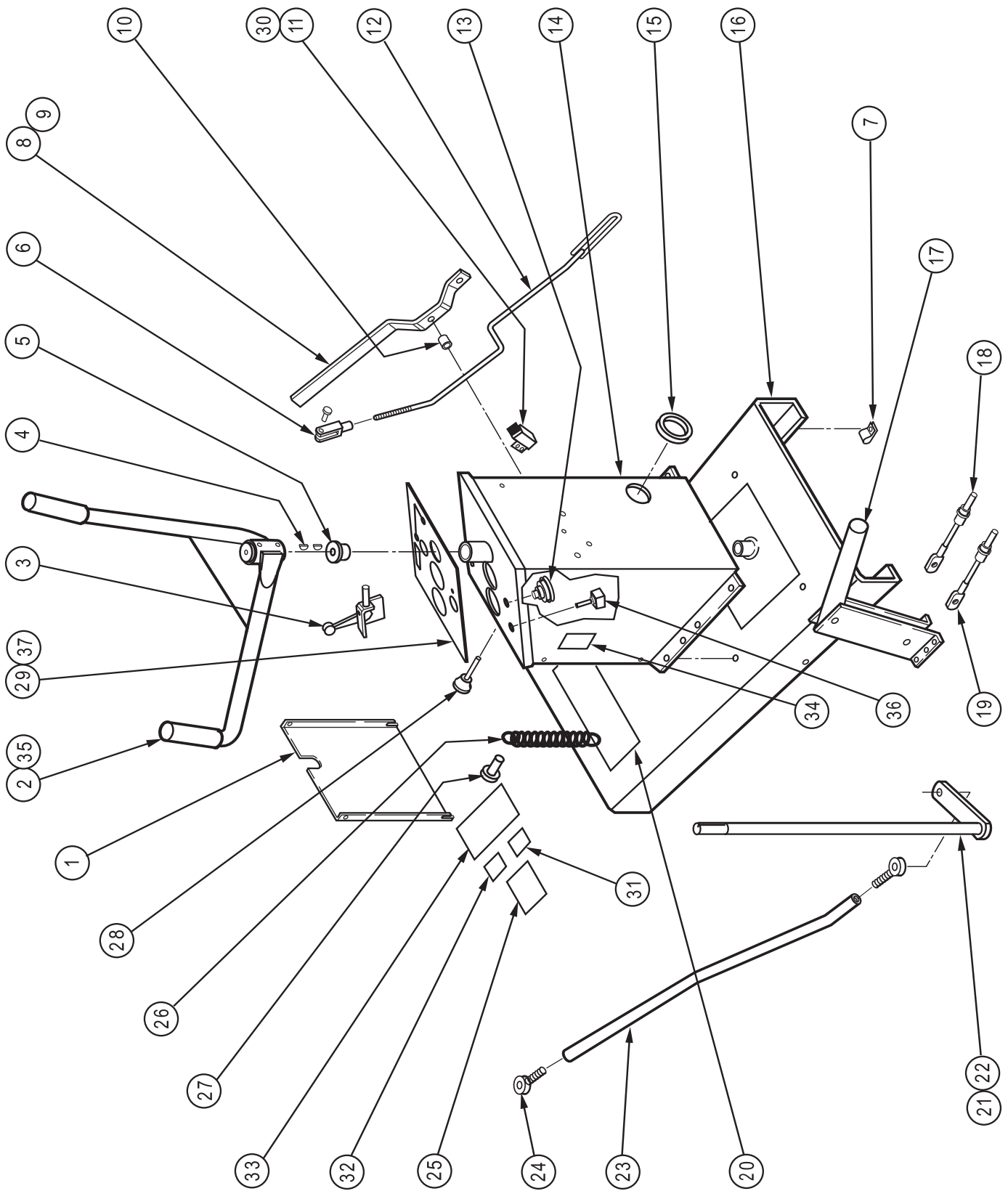
If the Part Number and the Description of your order do not agree, the Part Number will be used to fill your order.



## TANK AND REAR FORK ASSEMBLY

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	07333	SEAT	1	20	07244	TIRE AND WHEEL ASSEMBLY	2
2	07258	CAP, Bearing	1	21	302669	OIL TANK ASSEMBLY (with Fittings)	1
3	04512	SPRING, Seat	2	22	07339	OIL CAP	1
4	302228	SUPPORT, Seat Spring	1	23	07355	TANK BASE, Rubber	2
5	302133	BASE, Seat, (includes #6)	2	24	07101	SLIDE, Seat	1
6	06029	BUSHING	4	25	07175	CLAMP, Fuel Line	2
7	07260	CAP, Gas	1	26	302678	FUELLINE	1
8	302607	TANK, Gas (includes #27)	1	27	07068	VALVE, Fuel Shutoff	1
9	302638	SPRING	1	28	07349	SCREEN, Oil Tank	1
10	302552	STRAP, Rubber	4	29	07424	TIRE, Rear (Tire Only)	1
11	302551	STRAP, Tank	4	30	07425	RIM	1
12	302162	BASE, Spring	1	31	07427	STEM, Valve	1
13	06130	CONE, Bearing	2	*32	302560	FORK	1
	06131	CUP, Bearing	2	*33	07389	TIRE AND WHEEL ASSEMBLY	1
14	302070	FRAME	1	*34	07387	HUB	1
15	302043	FORK	1	*35	07390	MOTOR, Wheel	1
16	302068	SPACER, Rear Wheel	1	*36	302620	BRACKET, Fitting	1
17	07318	HUB, Rear Wheel	1	*37	302687	BRACKET, Hoses	1
18	302067	SPACER, Rear Wheel	1	*38	07426	RIM	1
19	302069	AXLE, Rear Wheel	1	*39	07269	BOLT, Wheel	1

\* Three Wheel Drive

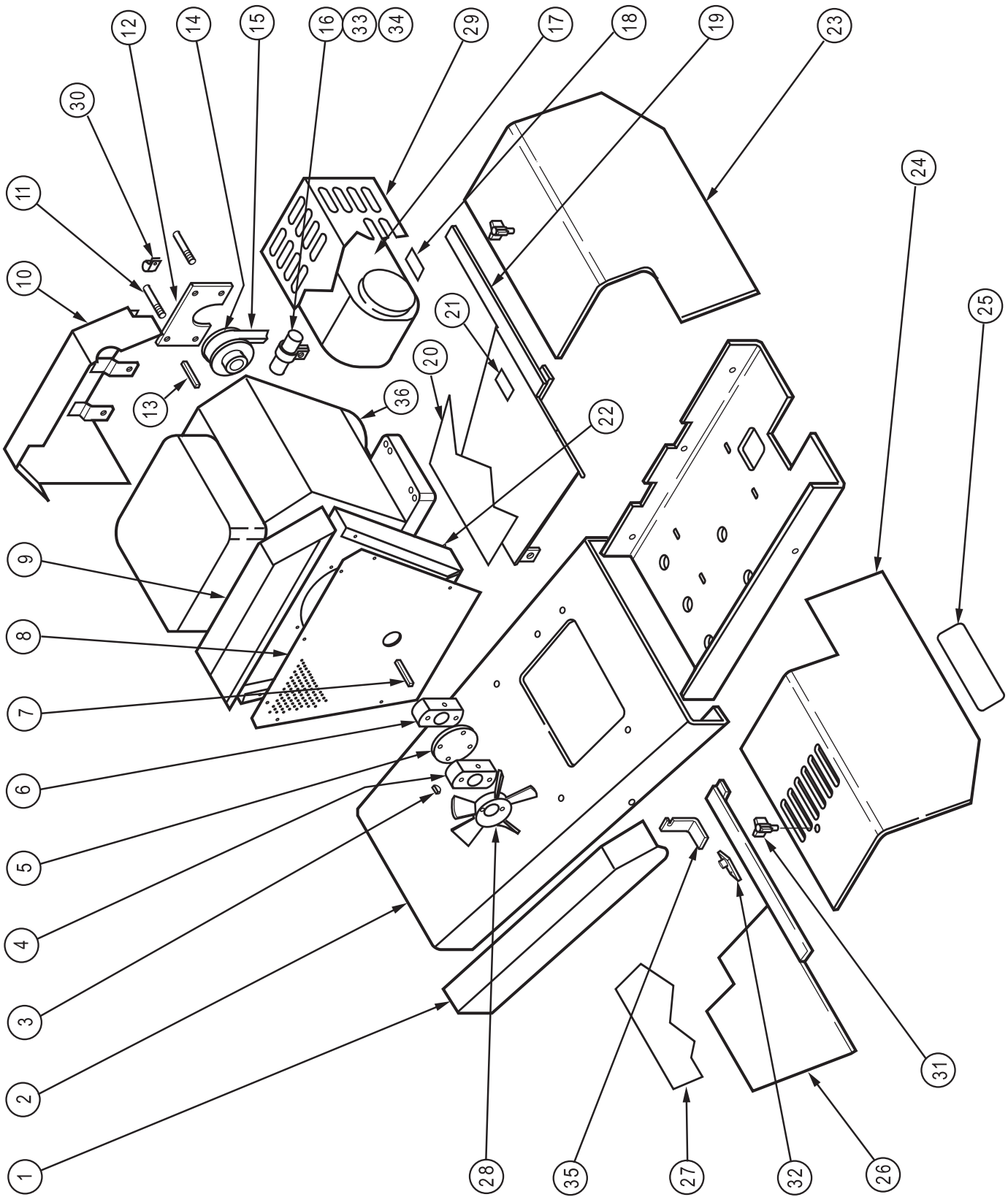


## STEERING TOWER ASSEMBLY

Item	Part No.	Description	Qty.
1	09114	COVER, Tower	1
2	302566	HANDLE BAR	1
3	07241	CONTROL, Throttle	1
4	04012	KEY, Woodruff	2
5	06030	BUSHING	2
6	04073	CLEVIS AND PIN	1
7	07364	CLAMP, Cable	1
8	302205	LEVER	1
9	07007	GRIP	1
10	200676	SPACER	1
11	07325	SWITCH	1
12	302208	ROD, Lever	1
13	07065	SWITCH, Ignition	1
14	302041	TOWER (includes #5)	1
15	07249	GROMMET	1
16	302070	FRAME	1
17	07346	LEVER, Brake	1
18	07347	CABLE, Brake, R.H.	1
19	07348	CABLE, Brake, L.H.	1

Item	Part No.	Description	Qty.
20	07408	DECAL, Instruction	1
21	302051	ARM, Steering	1
22	04011	RING, Snap	1
23	302743	TUBE, Steering	1
24	04074	END, Rod	2
25	07372	DECAL, CE	1
26	04544	SPRING	1
27	302659	SPACER, Spring	1
28	07242	CONTROL, Choke	1
29	07407	DECAL, Dash	1
30	07353	COVER, Switch	1
31	07404	DECAL, Noise, LWA	1
32	07405	DECAL, LPA	1
33	07406	DECAL, Slope	1
34	07403	DECAL, Parking Brake	1
35	07457	GRIP, Handle Bar	2
*36	07386	SWITCH, 3 WD	1
*37	07490	DECAL, Dash	1

\* Three Wheel Drive

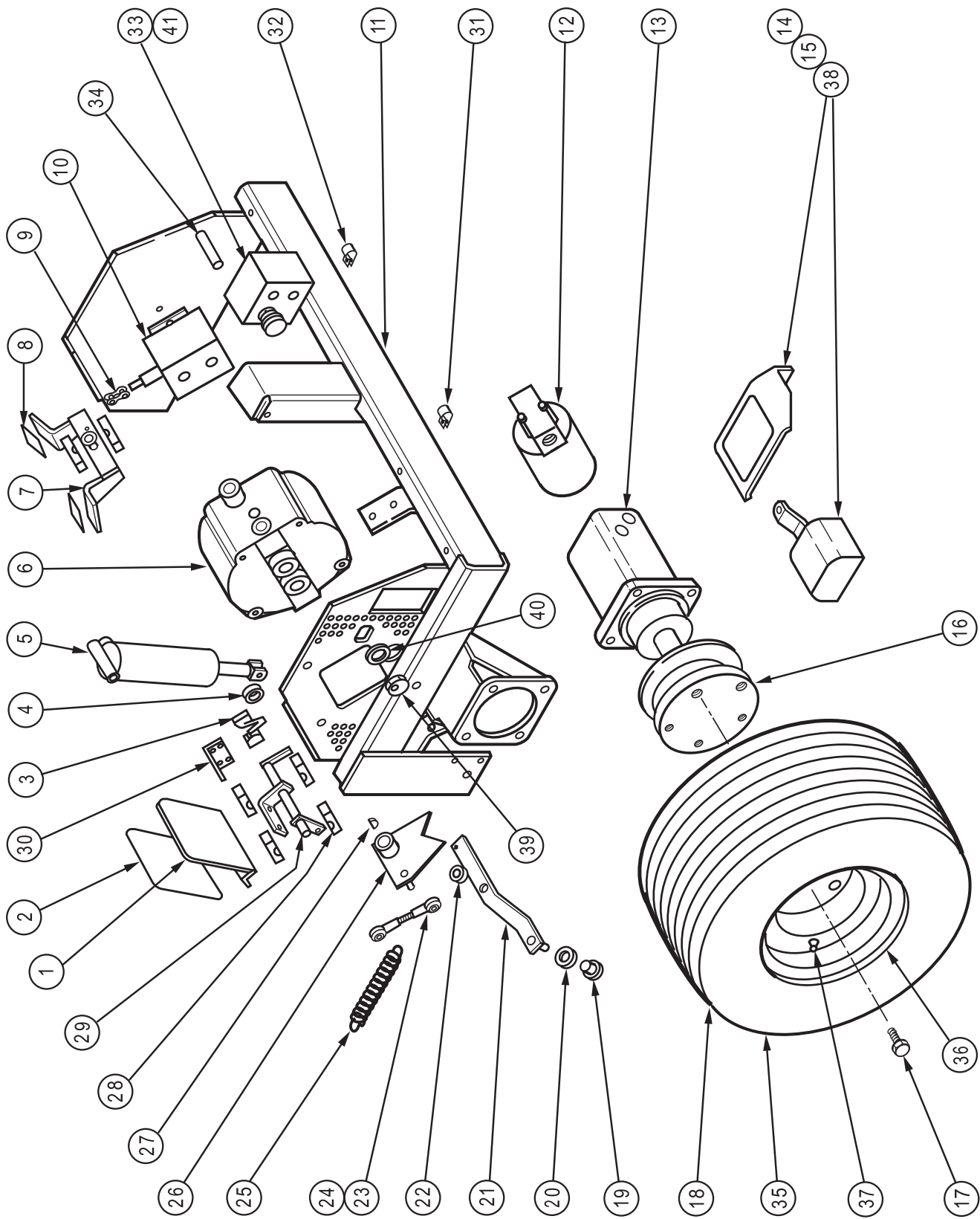




## ENGINE AND FOOTREST ASSEMBLY

Item	Part No.	Description	Qty.
1	09158	COVER	1
2	302070	FRAME	1
3	202436	KEY	1
4	302745	COUPLER, Pump	1
5	591181	DISK, Coupler	1
6	302744	COUPLER, Engine	1
7	302437	KEY	1
8	302093	FRONT PLATE, Air Duct	1
9	302359	AIR BOX	1
10	302301	HEATSHIELD	1
11	08061	GUIDE, Belt	2
12	302699	BRACKET, Belt Guide	1
13	302435	KEY	1
14	03628	PULLEY	1
15	03928	BELT (Gates 6840)	2
16	302128	PIPE, Exhaust	1
17	494664	MUFFLER	1
18	07256	DECAL, Down	1
19	302065	FOOTREST, L.H.	1

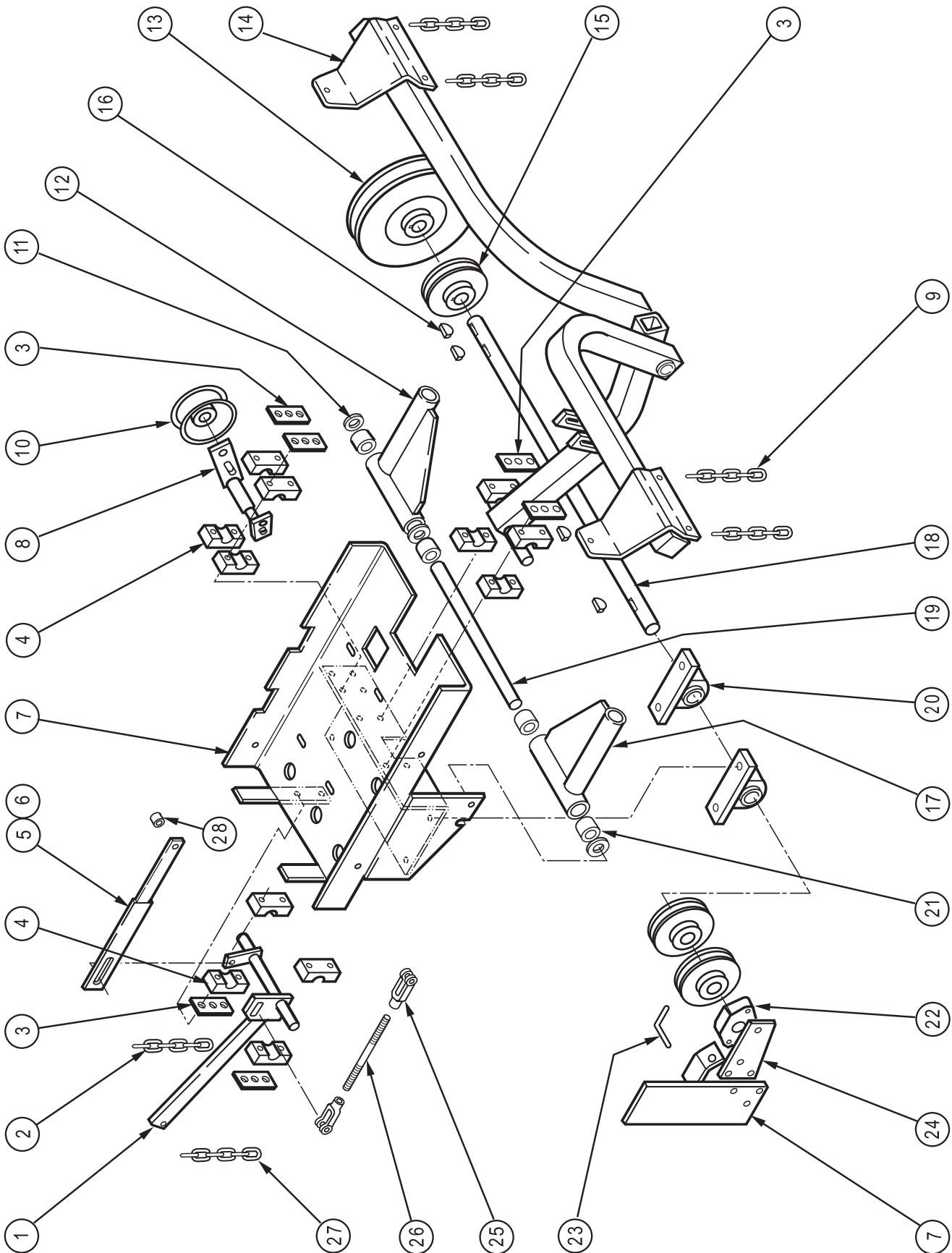
Item	Part No.	Description	Qty.
20	07262	NON-SKID, L.H.	1
21	07257	DECAL, Up	1
22	302092	PLATE, Mounting	1
23	302096	SHROUD, L.H.	1
24	302095	SHROUD, R.H.	1
25	07252	DECAL, National Mower Company	1
26	302064	FOOTREST, R.H.	1
27	07261	NON-SKID, R.H.	1
28	07270	FAN	1
29	302557	GUARD, Muffler	1
30	07360	CLAMP	1
31	07399	KNOB	2
32	302623	STOP, Pedal	1
33	07430	CLAMP, Muffler, 1-1/8"	1
34	07433	CLAMP, Muffler, 1-1/4"	1
35	302706	GUIDE, Hose	1
36		ENGINE AND PARTS (Order Through Briggs & Stratton)	1



## TRACTION PEDAL AND PUMP ASSEMBLY

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	09128	PEDAL, Traction	1	21	302479	ARM	1
2	07263	NON-SKID, Pedal	1	22	06129	BEARING, Ball	1
3	302533	SWITCHASSEMBLY	1	23	04075	END, Rod	2
4	07248	GROMMET	1	24	08068	ROD	1
5	07275	CYLINDER, Lift	1	25	04539	SPRING	1
6	07272	PUMP	1	26	302480	CONTROL, Pump	1
7	302156	PEDAL, Lift	1	27	04069	KEY	1
8	07264	NON-SKID, Pedal, Left	2	28	06126	BLOCK, Bearing	6
9	07240	LINK	1	29	302150	PIVOT, Pedal	1
10	07274	VALVE, Lift	1	30	302703	BRACKET, Switch	1
11	302070	FRAME	1	31	07360	CLAMP, Cable	1
12	07276	OIL FILTERASSEMBLY	1	32	07364	CLAMP, Cable	1
	07277	HEAD, Oil Filter	1	33	07394	BLOCK, 2WD	1
	07278	ELEMENT, Oil Filter	1	34	302624	SPACER	4
13	07388	MOTOR, Wheel	2	35	07410	TIRE, Front (Tire Only)	1
14	07350	CALIPER, R.H.	1	36	07425	RIM	1
15	07351	CALIPER, L.H.	1	37	07427	STEM, Valve	1
16	07352	ROTOR	2	38	302791	KIT, Brake Pad	2
17	07269	BOLT, Wheel	10	39	302855	HEXADJUSTER, Pump	1
18	07243	TIRE & WHEEL ASSEMBLY	2	40	302884	WASHER, Plated	1
19	06036	BUSHING	1	*41	07395	BLOCK 3WD	1
20	06037	BEARING, Thrust	1				

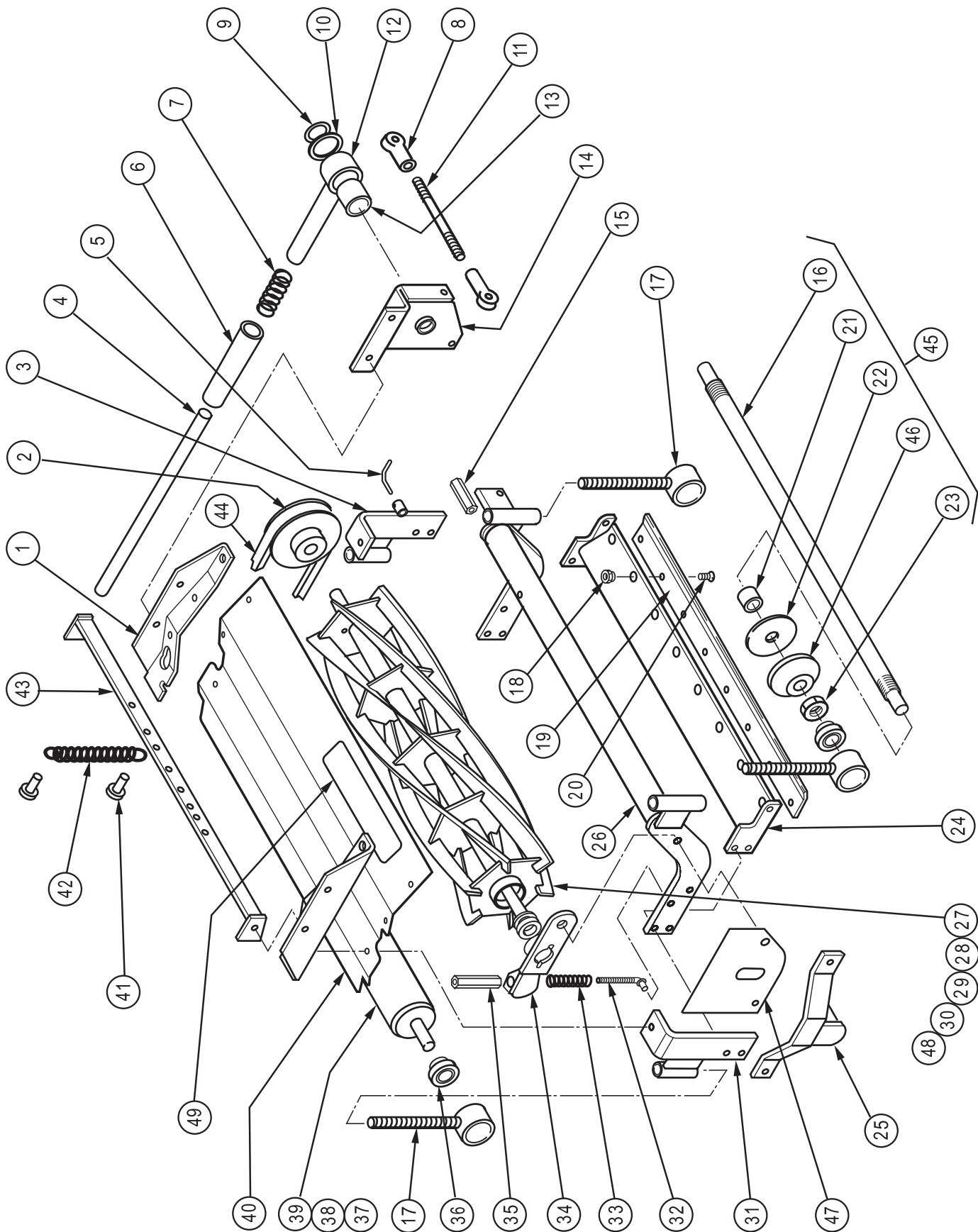
\* Three Wheel Drive



## LIFT ARM AND DRIVE ASSEMBLY

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	302076	ARM, Lift	1	15	03630	PULLEY	3
2	07458	CHAIN* Three Wheel Drive (5 Links)	1	16	04012	KEY, Woodruff	3
3	302325	SUPPORT, Bearing	6	17	302172	ARM, Push (includes #21)	1
4	06127	BLOCK, Bearing	12	18	302227	SHAFT	1
5	302161	STRAP, Lift	1	19	05073	SHAFT, Push Arm	1
6	04540	SPRING, Belt Idler	1	20	06125	BEARING, Pillow Block	2
7	302070	FRAME	1	21	06032	BUSHING	4
8	302082	ARM, Idler	1		06124	BEARING, Flange	1
9	07365	CHAIN	4	23	302360	SCRAPER, Pulley	3
10	03631	PULLEY, Idler	1	24	302114	BRACKET	1
11	06038	BEARING, Thrust	3	25	04073	CLEVIS AND PIN	2
12	302169	ARM, Push (Includes #21)	1	26	302702	ROD, Lift Link	1
13	03629	PULLEY	1	27	07265	CHAIN (6 Links)	1
14	302455	BAR, Lift	1	28	302611	SPACER	2

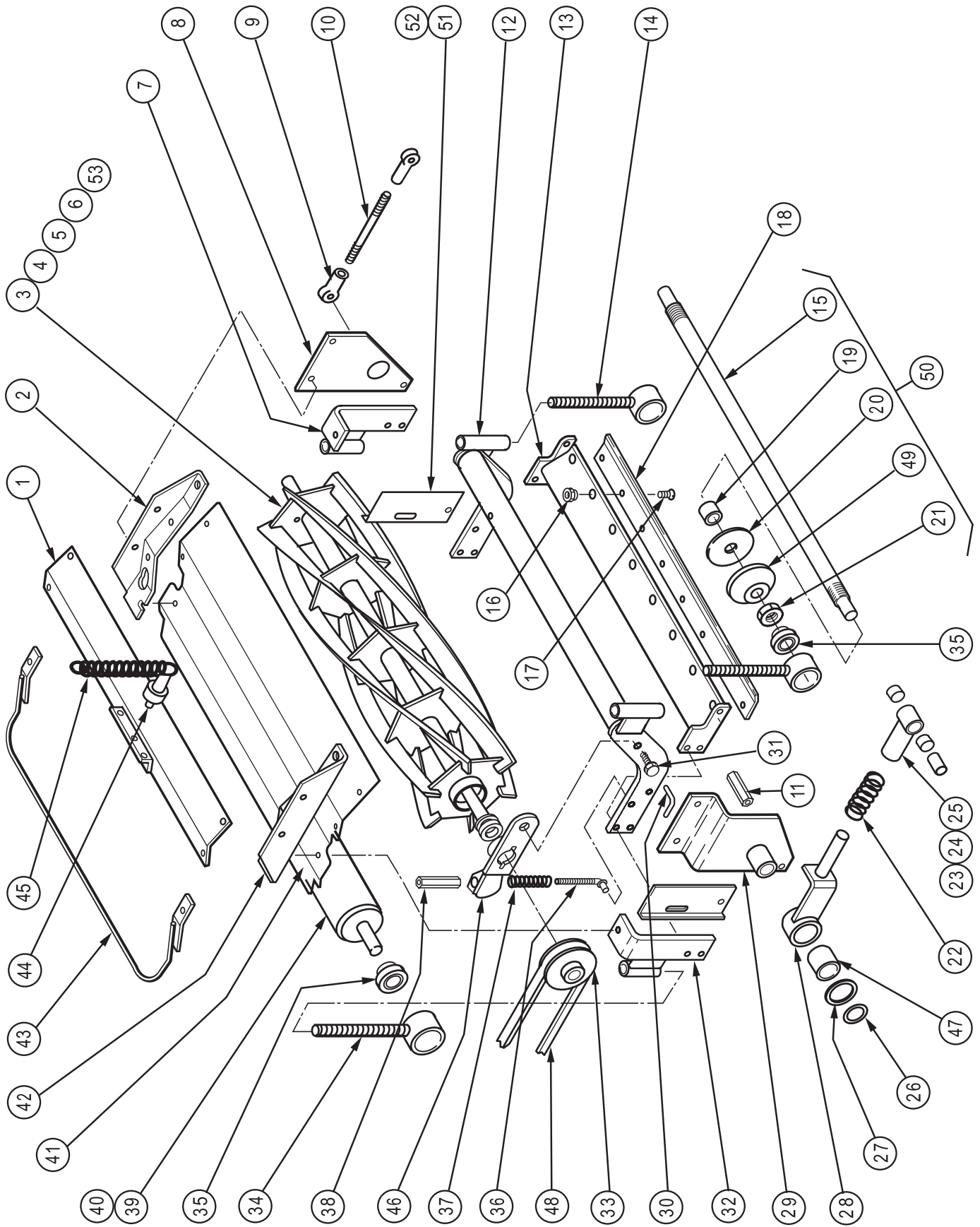
\* Three Wheel Drive



## FRONT CUTTING UNIT ASSEMBLY

Item	Part No.	Description	Qty.
1	302840	SIDEPLATE, L.H.	1
	302841	SIDEPLATE, R.H.	1
2	03606	PULLEY	1
3	302827	BRACKET, Rear Roller, L.H.	1
	302826	BRACKET, Rear Roller, R.H.	1
4	302336	SHAFT	1
5	302360	SCRAPER, Pulley	1
6	302601	SLEEVE, Rubber	1
7	04521	SPRING	1
8	04077	END, Rod	2
9	04071	RING, Snap	1
10	02644	WASHER	3
11	302639	CROSSLINK	1
12	302171	PULL ARM (includes #13)	1
13	06035	BUSHING	1
14	302185	PLATE, Side, R.H.	1
	302186	PLATE, Side, L.H.	1
15	05072	SPACER	1
16	05080	SHAFT, Front Roller	1
17	302846	ADJUSTER, Roller (Shown)	2
	302847	ADJUSTER, Roller	2
18	201802	NUT	8
19	302310	BEDKNIFE	1
20	02109	SCREW, Bedknife	8
21	302504	SPACER	17
22	02641	WASHER	16
23	02272	NUT, Roller	2
24	302311	BEDBAR & KNIFE ASSEMBLY	1
25	302904	SKIDBAR, R.H. (Shown)	1

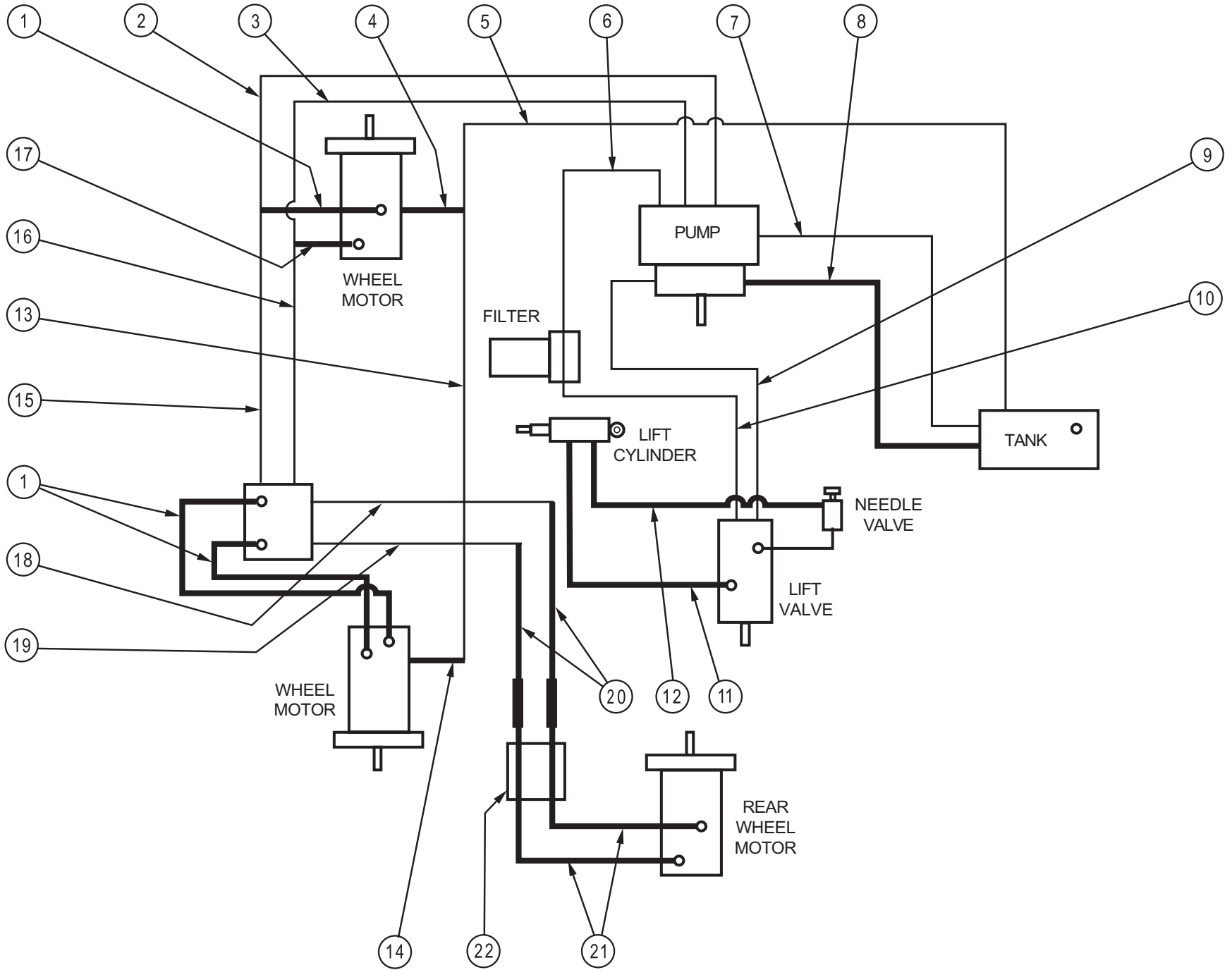
Item	Part No.	Description	Qty.
	302905	SKIDBAR, L.H.	1
26	302829	FRAME, Cutting Unit, R.H.	1
	302828	FRAME, Cutting Unit, L.H.	1
27	302491	REEL, 6 Blade	1
28	302738	REEL, 8 Blade	1
29	201437	WASHER, Backup	1
30	06120	CUP, Bearing	2
	06121	CONE, Bearing	2
31	302836	BRACKET, Rear Roller, R.H.	1
	302838	BRACKET, Rear Roller, L.H.	1
32	200236	ADJUSTER, Reel	2
33	04542	SPRING, Reel Adjuster	2
34	302549	REEL CARRIER, R.H.	1
	302550	REEL CARRIER, L.H.	1
35	05075	ADJUSTER, Hex Reel	2
36	06119	BEARING, Roller	4
37	302507	ROLLER, Rear (includes #38)	1
38	05078	PIN, Roller	2
39	06119	BEARING	4
40	302181	SHIELD	1
41	302659	SLEEVE	2
42	04543	SPRING	1
43	302179	CROSSBAR	1
44	03929	BELT, BX-58	1
45	302513	ROLLER (includes No's. 16, 21-23, 46)	1
46	302653	CAP, End	2
47	09173	GUARD, Reel	1
48	200256	SCREW and NUT	2
49	07437	DECAL, Hydro 70	1





## CENTER (REAR) CUTTING UNIT ASSEMBLY

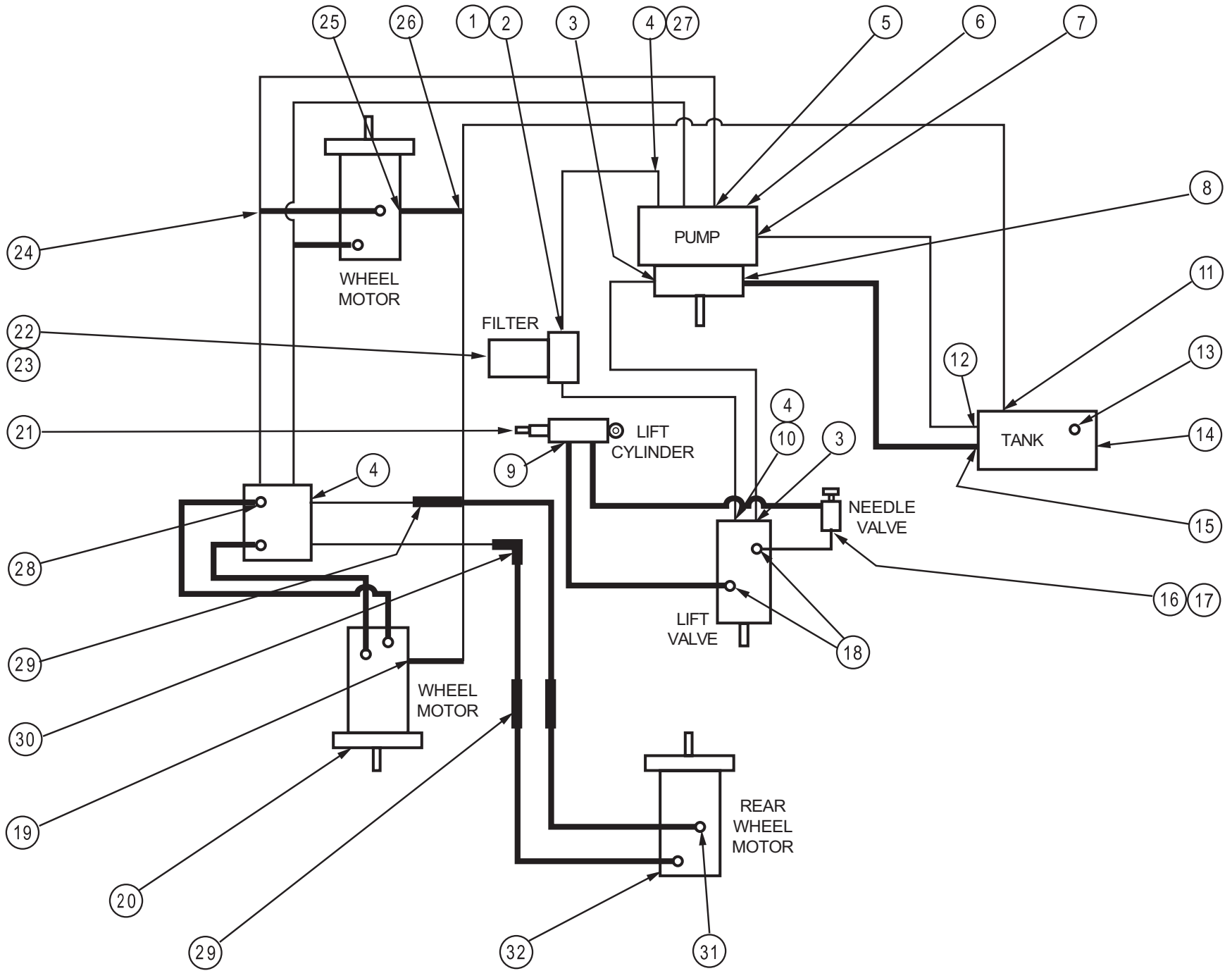
Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	302820	CROSSBAR	1	28	302248	ARM, Pull (includes #47)	1
2	302840	SIDE PLATE, L.H.	1	29	302511	PLATE, Side	1
3	302491	REEL, 6 Blade	1	30	302360	SCRAPER, Pulley	1
4	302738	REEL, 8 Blade	1	31	201383	CAPSCREW	1
5	06120	CONE, Bearing	2	32	302836	BRACKET, Rear Roller	1
	06121	CUP, Bearing	2	33	03606	PULLEY	1
6	201437	WASHER, Backup	1	34	302847	ADJUSTER, Roller	2
7	302838	BRACKET, Rear Roller	1	35	06119	BEARING	1
8	302245	BRACKET, Pull Arm	1	36	200236	ADJUSTER, Reel	1
9	04077	END, Rod	2	37	04542	SPRING, Reel Adjuster	2
10	302639	ROD, Pull	1	38	05075	ADJUSTER, Hex Reel	2
11	05072	SPACER	1	39	302507	ROLLER, Rear (includes #40)	2
12	302830	FRAME, Cutting Unit	1	40	05078	PIN, Roller	1
13	302311	BEDBAR & KNIFE ASSEMBLY	1	41	302181	SHIELD	1
14	302846	ADJUSTER, Roller	2	42	302842	PLATE, Side, R.H.	1
15	05080	SHAFT, Roller	1	43	302401	GUARD, Rear	1
16	201802	NUT, Bedbar	8	44	302658	SLEEVE	1
17	02109	SCREW, Bedbar	8	45	04544	SPRING	1
18	302310	BEDKNIFE	1	46	302273	CARRIER, Reel, R.H.	1
19	302504	SPACER	17		302272	CARRIER, Reel, L.H.	1
20	02641	WASHER	16	47	06035	BUSHING	2
21	02272	NUT, Roller Shaft	2	48	03930	BELT, BX-38	1
22	04541	SPRING	1	49	302653	CAP, End	2
23	302252	PULL ARM (includes #25)	1	50	302513	ROLLER (includes #15, 19-21, 49)	2
24	302255	SLEEVE	1	51	302680	REEL GUARD ASSEMBLY, R.H.	1
25	06031	BUSHING	1	52	302681	REEL GUARD ASSEMBLY, L.H.	1
26	04071	RING, Snap	1	53	200256	SCREW AND NUT	1
27	02644	WASHER	3				



## HYDRAULIC HOSE AND LINE ASSEMBLY

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	07303	HOSE, Motor	3	12	07304	HOSE, Lift Cylinder	1
2	07309	LINE, Pump to Tee	1	13	07308	LINE, Case Drain	1
3	07310	LINE, Pump to Tee	1	14	07302	HOSE, Case Drain, L.H.	1
4	07299	HOSE, Case Drain, R.H.	1	15	07377	LINE, Tee to Block	1
5	07306	LINE, Case Drain	1	16	07378	LINE, Tee to Block	1
6	07311	LINE, Pump to Filter	1	17	07305	HOSE, Motor	1
7	07307	LINE, Tank to Pump	1	*18	07380	LINE, Block to Bulkhead	1
8	07300	HOSE, Suction	1	*19	07379	LINE, Block to Bulkhead	1
9	07375	LINE, Pump to Valve	1	*20	07382	HOSE, Bulkhead to Bulkhead	2
10	07376	LINE, Filter to Valve	1	*21	07381	HOSE, Rear Motor	2
11	07301	HOSE, Lift Cylinder	1	*22	302688	SLEEVE, Hoses	1

\* Three Wheel Drive

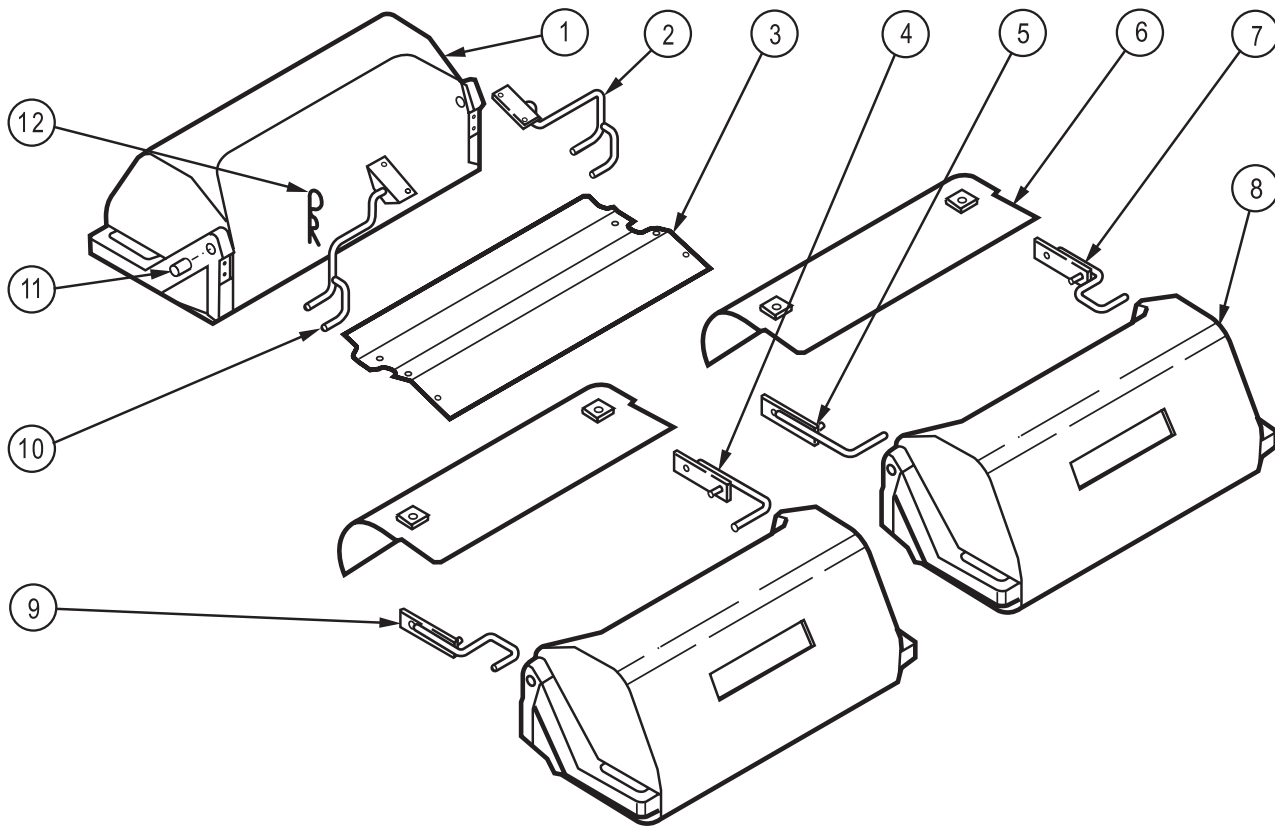


## HYDRAULIC FITTING ASSEMBLY

Item	Part No.	Description	Qty.
1	07283	FITTING, Reducer	2
2	07284	FITTING, Straight	2
3	07297	FITTING, 45°	2
4	07285	FITTING, Straight	4
5	07286	FITTING, 90°	2
6	07272	PUMP, Hydraulic	1
7	07287	FITTING, 90°	1
8	07288	FITTING, Straight	1
9	07369	FITTING, 45°	2
10	07356	FITTING, 90°	1
11	07290	FITTING, 90°	1
12	07291	FITTING, Straight	1
13	07341	FITTING, Plug	1
14	07317	GAUGE, Sight	1
15	07316	SCREEN, Tank	1
16	07279	VALVE, Needle	1

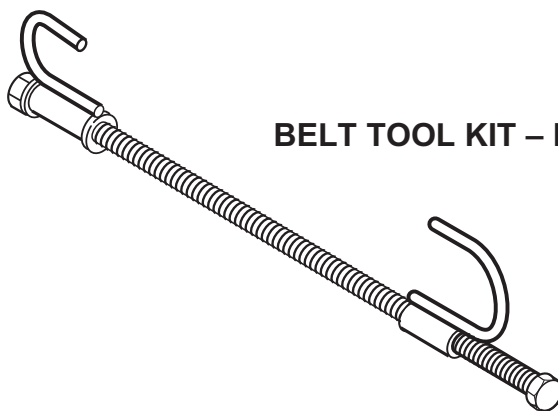
Item	Part No.	Description	Qty.
17	07293	NIPPLE	1
18	07292	FITTING, 90°	2
19	07281	ADAPTER, Straight	2
20	07388	MOTOR, Wheel	2
21	07275	CYLINDER, Lift	2
22	07277	HEAD, Filter	1
23	07278	CARTRIDGE, Filter	1
24	07298	FITTING, Tee	2
25	07295	FITTING, 90°	1
26	07282	FITTING, Tee	1
27	07357	FITTING, 90°	1
28	07391	FITTING, Straight	4
*29	07393	FITTING, Straight Bulkhead	3
*30	07392	FITTING, 90° Bulkhead	1
*31	07412	FITTING, Straight	2
*32	07390	MOTOR, Wheel	1

\* Three Wheel Drive

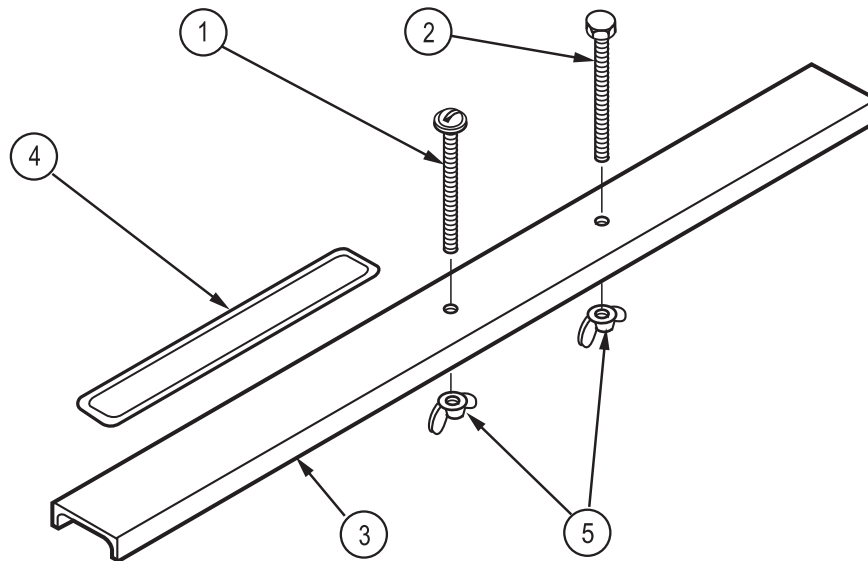


**BASKET ASSEMBLY – Kit No. 070001**

Item	Part No.	Description	Qty.
1	07337	BASKET, Rear	1
2	302526	HANGER	1
3	302562	SHIELD, Rear Cutting Unit	1
4	302527	BRACKET, Basket	1
5	302528	BRACKET, Basket	1
6	302390	SHIELD, Front Throw	2
7	302529	BRACKET, Basket	1
8	07338	BASKET, Front	2
9	302383	BRACKET, Basket	1
10	302525	HANGER	1
11	07499	BUSHING	6
12	04080	COTTER, Hairpin	1



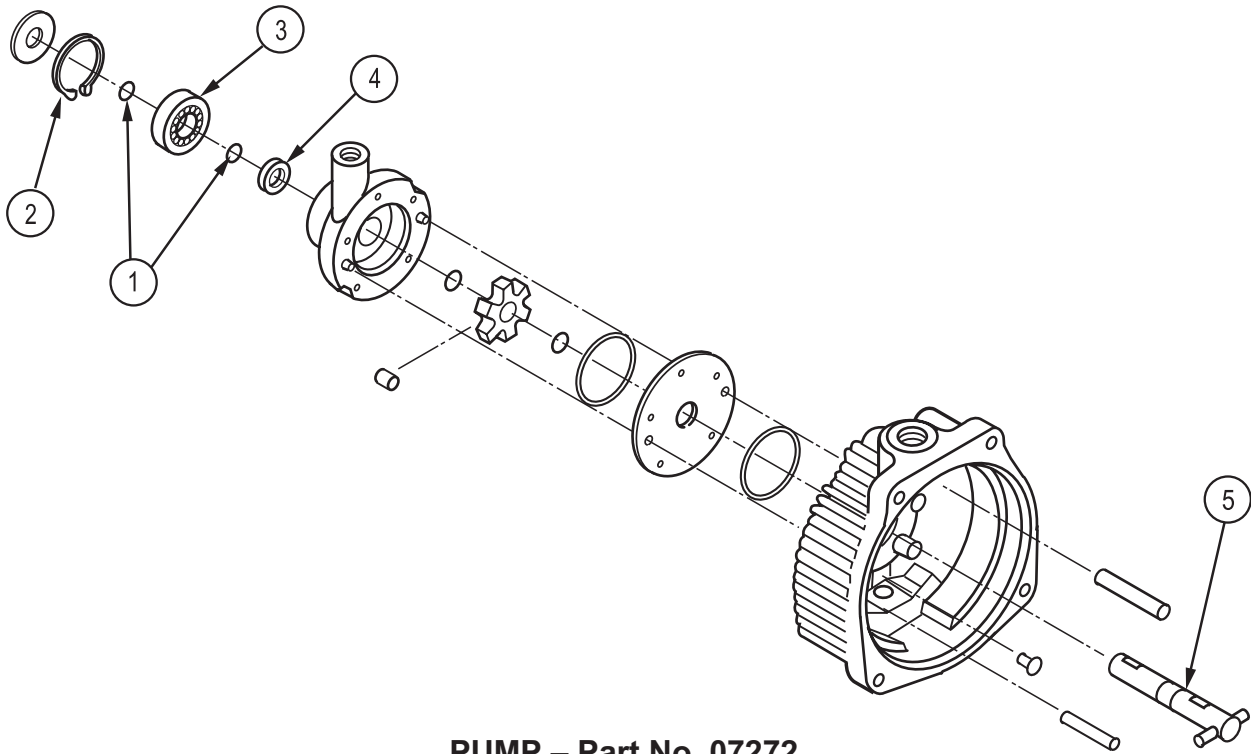
**BELT TOOL KIT – Kit No. 070008**



**HEIGHT OF CUT BAR – Kit No. 070009**

Item	Part No.	Description	Qty.
1	02129	SCREW, Machine	1
2	02128	CAPSCREW, Hex Head	1
3	302214	CHANNEL	1

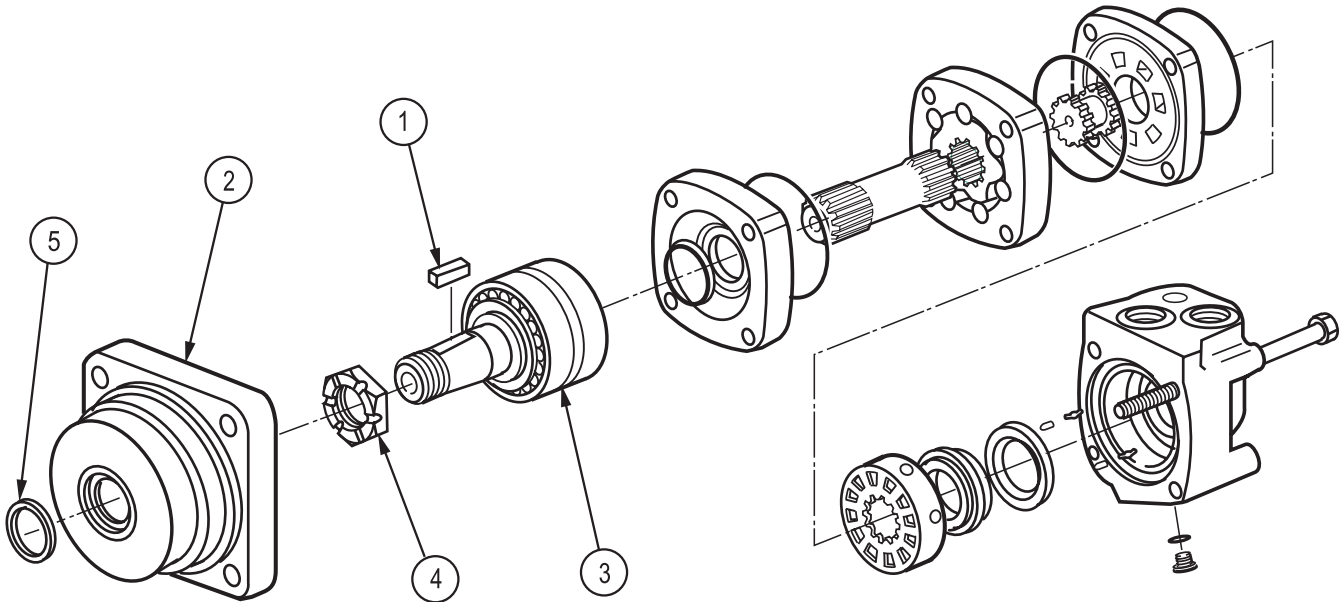
Item	Part No.	Description	Qty.
4	302654	DECAL	1
5	02282	NUT, Wing	2



**PUMP – Part No. 07272**

Item	Part No.	Description	Qty.
1	302760	SNAPRING	2
2	302761	RING, Retaining	1
3	302763	BEARING, input	1

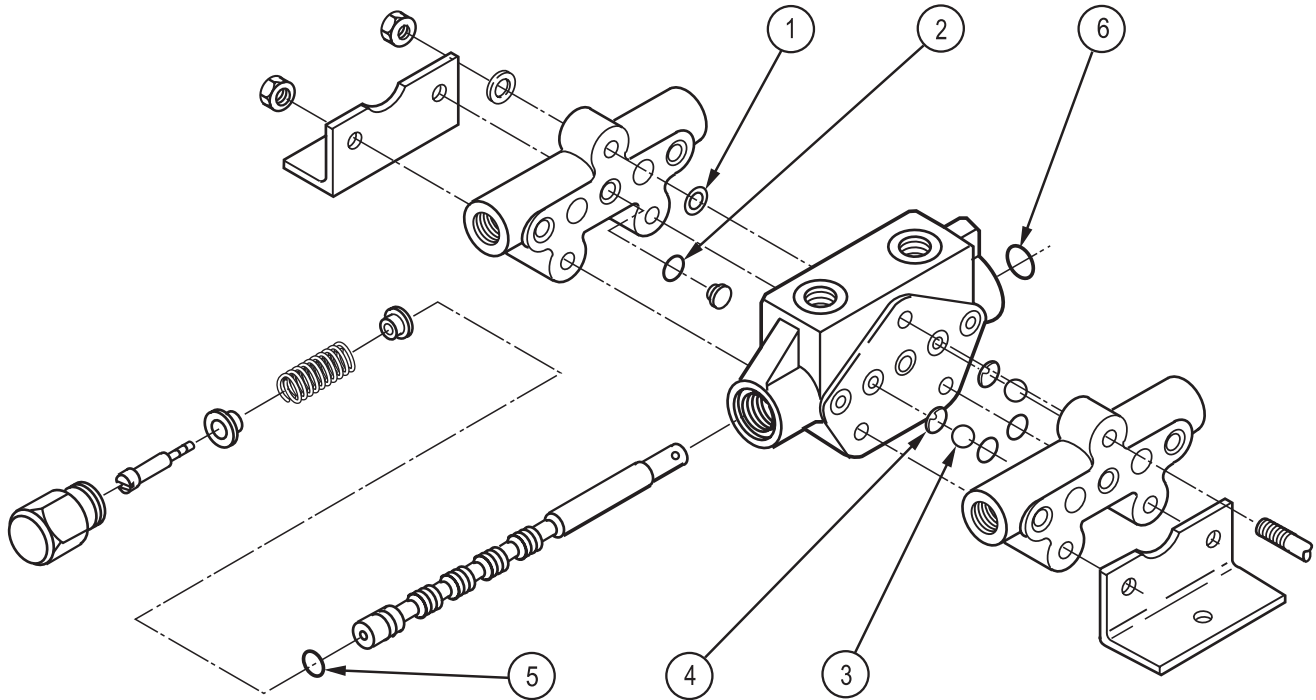
Item	Part No.	Description	Qty.
4	302762	SEAL	1
5	302759	SHAFT, Input	1



**WHEEL MOTOR – Part No's. 07273, 07388 07390**

Item	Part No.	Description	Qty.
1	302718	KEY	1
2	302715	BEARINGHOUSING	1
3	302716	SHAFT & BEARINGKIT	1

Item	Part No.	Description	Qty.
4	302717	NUT, Hex	1
5	302714	SEALKIT	1

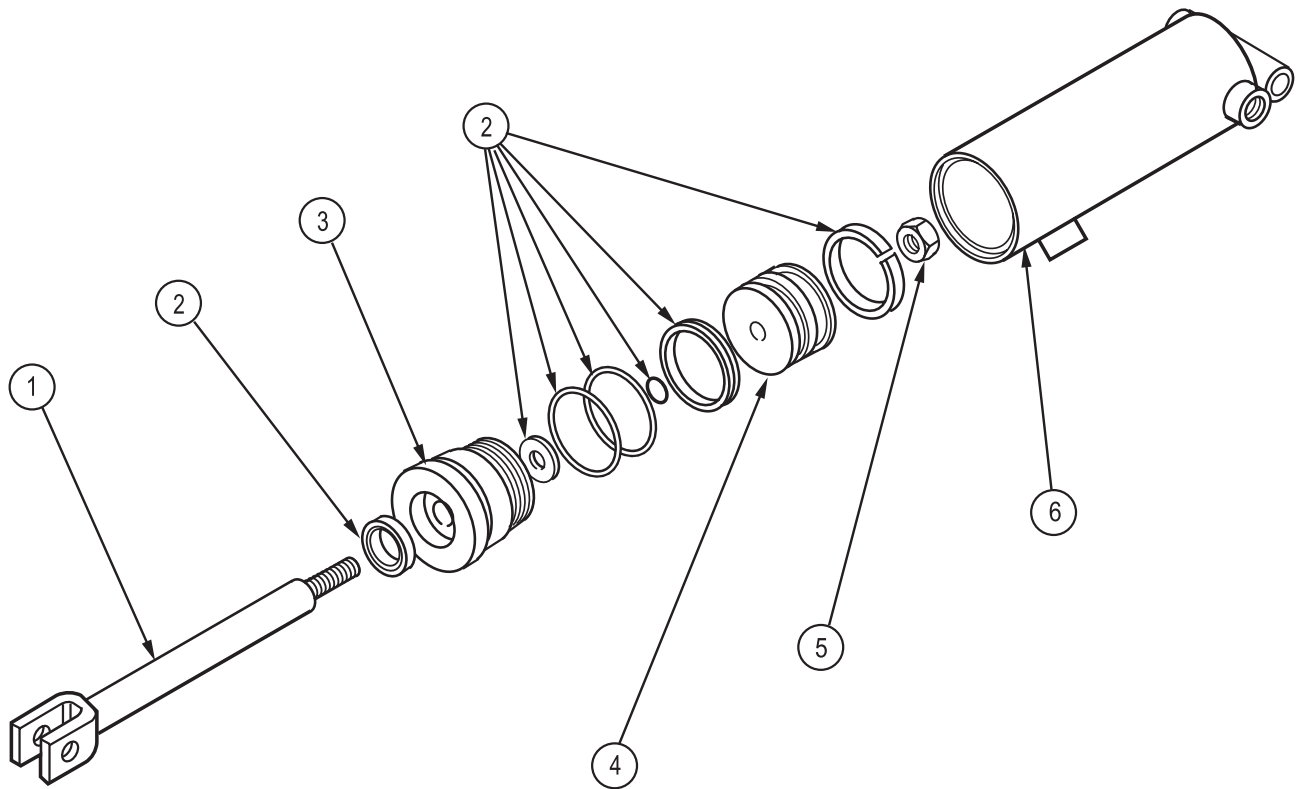


**LIFT VALVE – Part No. 07274**

Item	Part No.	Description	Qty.
1	302725	SHIM, Mylar	AR
2	302726	O'RINGKIT	1
3	302727	BALL	2

Item	Part No.	Description	Qty.
4	302728	RETAINER	2
5	302729	O'RING	1
6	302730	O'RING	1

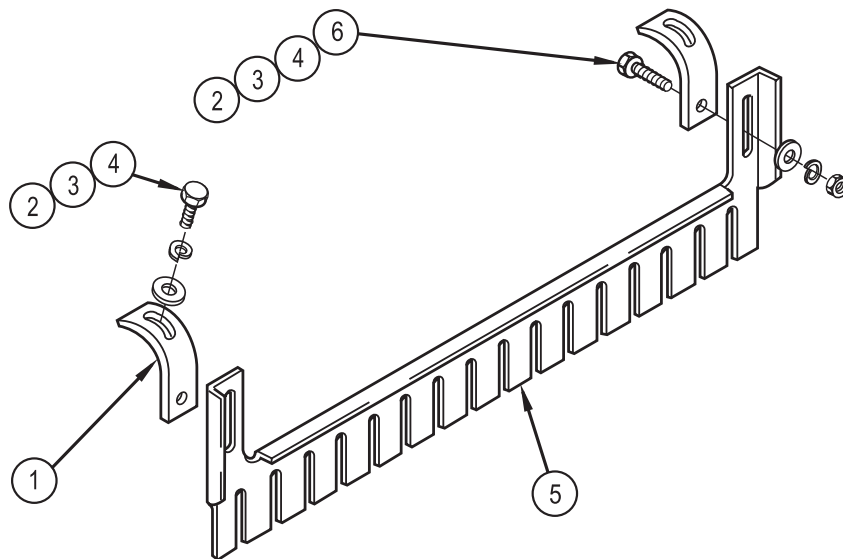




**LIFT CYLINDER – Part No. 07275**

Item	Part No.	Description	Qty.
1	302709	SHAFT WELDMENT	1
2	302711	SEAL KIT	1
3	302710	GLAND, End	1

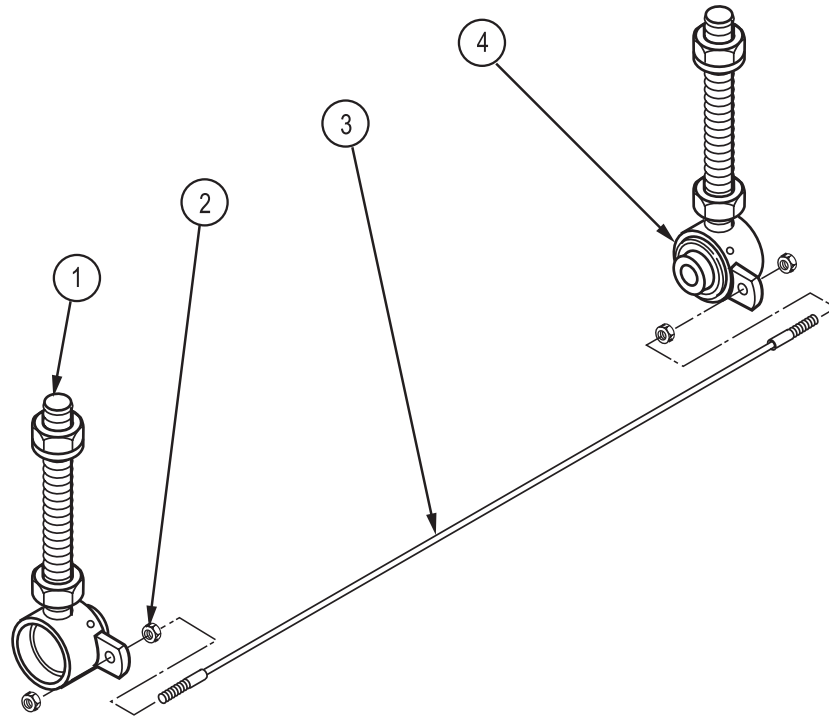
Item	Part No.	Description	Qty.
4	302712	PISTON	1
5	302713	LOCK NUT, 1/2"-13UNC	1
6	NA	TUBE WELDMENT	1



**FRONT ROLLER SCRAPER KIT – Part No. 070005**

Item	Part No.	Description	Qty.
1	302693	HANGER	6
2	02012	CAPSCREW, Hex Head	12
3	02402	WASHER, Flat	12

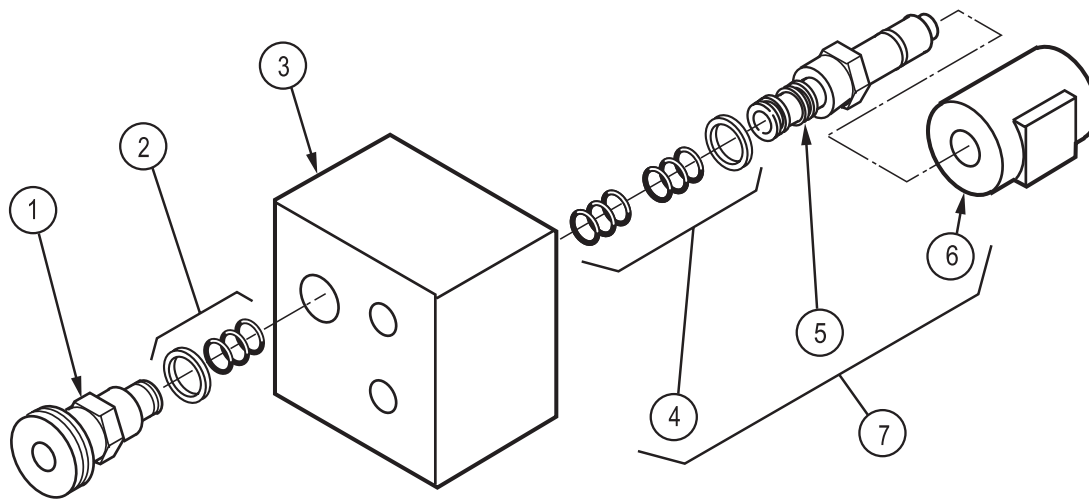
Item	Part No.	Description	Qty.
4	02302	WASHER, Lock	12
5	302692	SCRAPER, Roller	3
6	02205	NUT, Full	6



**REAR ROLLER SCRAPER KIT – Part No. 070013**

Item	Part No.	Description	Qty.
1	302864	ADJUSTER, Rear Roller	3
2	02228	NUT, Jam	12

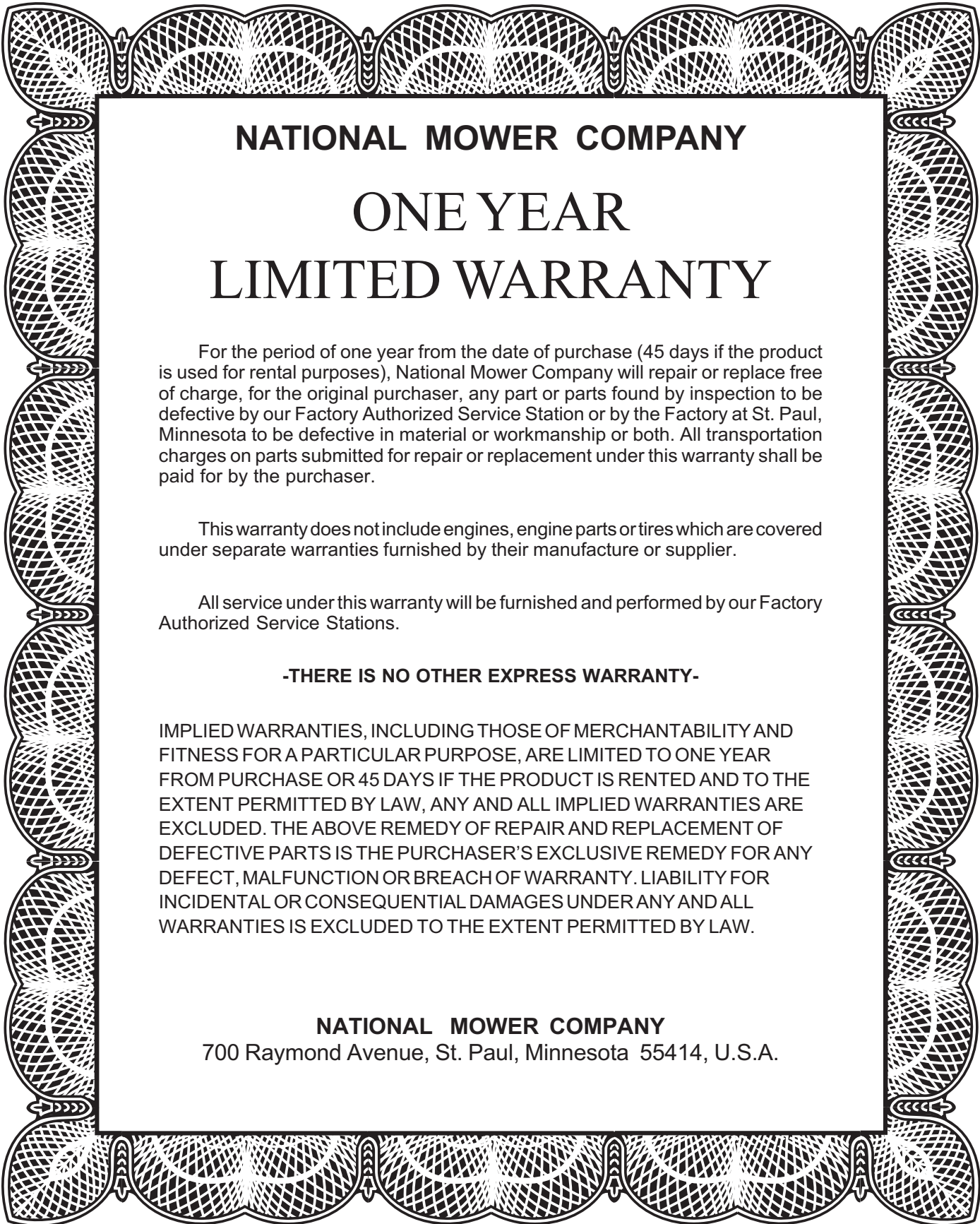
Item	Part No.	Description	Qty.
3	09169	CABLE, Roller Scraper	3
4	302865	ADJUSTER, Rear Roller	3



**VALVE BLOCK – Part No. 07395**

Item	Part No.	Description	Qty.
1	302719	VALVE, Needle	1
2	302720	SEAL KIT	1
3	N/A	BLOCK, Valve	1
4	302722	SEAL KIT, 3 WD	1

Item	Part No.	Description	Qty.
5	302723	CARTRIDGE, Valve, 3 WD	1
6	302724	COIL, Valve, 3 WD	1
7	302721	SPOOL, Valve, 3WD	1



## NATIONAL MOWER COMPANY

# ONE YEAR LIMITED WARRANTY

For the period of one year from the date of purchase (45 days if the product is used for rental purposes), National Mower Company will repair or replace free of charge, for the original purchaser, any part or parts found by inspection to be defective by our Factory Authorized Service Station or by the Factory at St. Paul, Minnesota to be defective in material or workmanship or both. All transportation charges on parts submitted for repair or replacement under this warranty shall be paid for by the purchaser.

This warranty does not include engines, engine parts or tires which are covered under separate warranties furnished by their manufacture or supplier.

All service under this warranty will be furnished and performed by our Factory Authorized Service Stations.

**-THERE IS NO OTHER EXPRESS WARRANTY-**

IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE YEAR FROM PURCHASE OR 45 DAYS IF THE PRODUCT IS RENTED AND TO THE EXTENT PERMITTED BY LAW, ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. THE ABOVE REMEDY OF REPAIR AND REPLACEMENT OF DEFECTIVE PARTS IS THE PURCHASER'S EXCLUSIVE REMEDY FOR ANY DEFECT, MALFUNCTION OR BREACH OF WARRANTY. LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER ANY AND ALL WARRANTIES IS EXCLUDED TO THE EXTENT PERMITTED BY LAW.

**NATIONAL MOWER COMPANY**  
700 Raymond Avenue, St. Paul, Minnesota 55414, U.S.A.